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The Antiseptic

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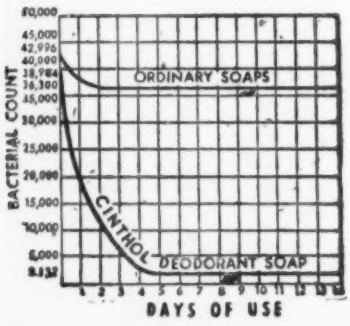

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Original Articles

STRICTURE OF THE URETHRA*

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Madurai.

A STRICTURE may be defined as a pathological constriction of the urethral canal either congenital or acquired, and of such size as to prevent the easy passage of No. 26 Fr. sound.

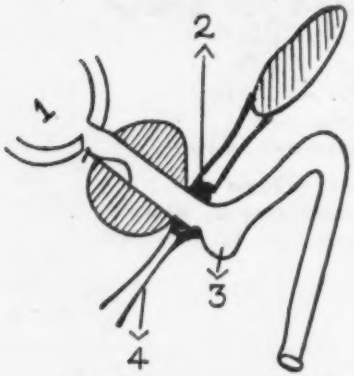
Stricture of the urethra is quite a common condition and all the three types of stricture *viz.*, (*a*) congenital (*b*) traumatic and (*c*) inflammatory, appear to have been as common 1000 or 2000 years ago as they are to-day. Gonorrhœa, the chief cause of stricture was undoubtedly present even in ancient times, as characteristic descriptions appear in the oldest medical record we possess. The Egyptian books, ancient Japanese writings and the old Testament all contain descriptions of this condition. Sushruta mentions in his list of instruments, sounds and bougies, which must have been used in the treatment of urethral strictures.

A thorough knowledge of the surgical anatomy of the urethra is necessary to a proper understanding of strictures.

The male urethra is a tube about 8½" long—divided anatomically into 3 parts—of these the prostatic urethra is 1¾" long ; the membranous urethra surrounded by the compressor urethral muscle is ¾" long and the spongy urethra surrounded by the corpus spongiosum is about 6" long. Clinically we recognise an anterior and a posterior urethra separated from each another by the sphincteric

* Specially contributed to THE ANTISEPTIC.

action of the compressor urethræ. The prostatic urethra is absolutely fixed while the membranous urethra is more or less fixed by the muscle surrounding it. The first 1½" of the spongy urethra (the bulbous portion) is attached to the fascial anterior layer of the triangular ligament and the remainder is entirely free. The prostatic and membranous portions lie more or less in a straight line pointing downwards and forwards at right angles to the triangular ligament. There is thus, a right angle bend at the junction of the bulbous with the membranous urethra and it is only the comparative mobility of the anterior layer of the triangular ligament that makes it possible to get these portions in line or to pass such an instrument as the panendoscope. The bulbous portion of the urethra forms a pouch on the floor of the urethra and it is important to remember when passing a sound that the opening of the membranous urethra is in the roof of the bulbous urethra and the tip of the instrument must be kept in contact with the roof of the urethra.



1. Bladder. 2. Compressor urethral muscle. 3. Bulb of urethra. 4. Ant. layer of triangular ligament.

Before proceeding to the subject proper, a brief description of the different urological scales of the various instruments used in the diagnosis and treatment of strictures will be appropriate. There is the English scale which is the one noted on many of the rubber catheters we use. There is the American scale and then the widely used French or Charriere scale. In the French or Charriere scale the number mentioned on the instrument relates to the number of thirds of a millimetre in the diameter. The similar number in the American scale refers to the number of half millimetres in the diameter of the instrument. The English scale was started arbitrarily but however, there is a relationship to the American scale and the number of the size is less than the number of half millimetres in the diameter by 2. *i.e.*, less than the American scale by 2. In other words a sound, the size of which is 6 mm. in diameter is 18 French or Charriere 12 American and 10 English.

The three types of strictures will now be considered in order :—

I. Congenital obstructions of the urethra consist of stenosis of the meatus, stricture of the urethra, congenital valves of the posterior urethra and sclerosis and contracture of the interior sphincter. The commonest lesion of all these is stenosis of the meatus and the next common is the post-urethral folds or contracture of the vesical sphincter. Stricture at the external meatus is often

associated with phimosis and the doctor performing circumcision very often misses the stenosed meatus, which is the cause of all the symptoms. The symptoms are frequency of micturition, and enuresis and sometimes a full bladder may be made out. The infant cries at every voiding and there may occasionally be blood on the diaper. A meatus with an antero-posterior diameter of 3 mm. or less is abnormally small. Again a child of one year should accommodate a No. 10 Fr. at 5 years a No. 15 Fr. sound at 10 years a 18 Fr. sound. Any meatus which cannot take these sizes is therefore, to be deemed smaller than normal.

TREATMENT :—In some cases, gradual dilatation of the meatus will do. In many cases meatotomy is necessary and a simple method is as follows—A small A forceps is used. One jaw is inserted within the urethral meatus to the floor of the urethra posterior to the urethral web, which is generally found across the inferior part of the meatus. The forceps is closed on the web in the midline for 5 minutes in order to crush the tissue and render it avascular. The hæmostat is then removed. A small knife blade is used to incise the crushed web in its midline. There is hardly ever any bleeding. No sutures are necessary. The wound heals within a week. The incision should be kept from healing across the middle line by using manual pressure after each voiding to keep the cut lips of the meatus separated until the edges are completely healed. In infants, this operation may be done under ether anæsthesia. In older children and in adults this method of meatotomy may be done after injecting 1% procaine solution into the base of the web and the frænum. In infants, a bougie and in older children and adults a sound should be passed through the meatus until the meatotomy wound is healed.

Congenital obstruction in the posterior urethra is of 2 main types :—There may be a certain amount of stenosis or there may be valvular folds stretching from the verumontanum upwards or downwards which fill up, when the patient wants to pass urine and prevent the passage of urine. Such valve-like folds have been noticed on cystoscopic examination and this condition is usually found in children with frequent micturition, dribbling and symptoms of chronic ill-health. Many of these patients show a large bladder and constant dribbling—a condition of overflow-incontinence. Early diagnosis and dilatation may help a great many of these towards recovery. Traumatic strictures of the urethra which are difficult to treat are fortunately uncommon ; out of 100 cases of stricture 95% were found to be due to inflammation and only 1·9% due to trauma.

The two common causes are :—Straddle injuries in which the bulbous urethra is involved and the ruptures of the urethra associated with fracture of the pelvis. Prompt recognition of these injuries will prevent the development of a difficult stricture.

In the straddle injuries, perineal exposure, evacuation of hæmatoma and careful passage of a catheter and maintaining it there for at least 5 days will be necessary. In cases where there is complete rupture and the proximal end cannot be located, a suprapubic cystotomy and a retrograde passing of a catheter may be necessary.

As for the injuries of the rupture associated with fractures of the pelvis, it is considered very dangerous to place patients in the exaggerated lithotomy position which alone will give proper exposure. That suture is often unnecessary in these cases and that the imperative nature of the primary repair has been overstressed is the opinion of some experienced surgeons. Of great importance however, is the stabilisation of the pelvis and suprapubic cystotomy in the management of such cases.

Inflammatory stricture of the urethra.—Approximately 95% of all urethral strictures are inflammatory in nature and the vast majority of these are post-gonorrhœal. Inflammatory strictures may occur in any part of the canal but the common areas of stricture are in the bulbous urethra in 72% of cases, in both penile and bulbous portions (multiple strictures) in 22% of cases and only about 6% in the meatus and distal one third of the penis. The bulbous urethra is the commonest site for stricture, because the floor of the bulbous urethra is the point of the fixed curve on which the full force of the stream impinges and in gonorrhœal urethritis, damage is produced by this force, excessive infiltration occurs and later stricture develops.

PATHOLOGY.—The mucous membrane of the urethra becomes indurated and thickened. Resorption of infiltrating elements deposited in the submucosal and periglandular tissues during the acute stage leads to the substitution of fibrous tissue ; this contraction causes narrowing of the urethral lumen. Once the impediment arises, a small amount of urine which it first holds back is nevertheless, sufficient to irritate the tissues behind the stricture so that the processes of inflammation and repair by the formation of scar tissue proceeds in a vicious circle.

SYMPTOMS :—The common symptoms are a slight urethral discharge and changes in the urinary stream. The stream may be twisted, or forked any way it is small and thin and straining is found to assist in the act of micturition. In the more severe cases of stricture, the stream becomes so reduced that urine dribbles out drop by drop, the act of urination requiring considerable time and even then being incomplete. Frequency of urination especially nocturia is a common presenting symptom.

Various sexual disabilities may be present and sterility may be caused, because the ejaculate will not come out readily. A little congestion such as may be caused by cold or by alcohol may precipitate acute retention. Dilatation of the urethra behind the

stricture results in infiltration of the urethral wall which may rupture sometimes causing extravasation, infection, abscess and urinary fistulæ. Longstanding stricture causes infective changes in the bladder and kidneys and general deterioration of health.

DIAGNOSIS OF STRICTURE :–The clinical history of slowly increasing difficulty of micturition in a middle-aged man with a past history of gonorrhœa is in favour of a stricture. Local examination begins with the meatus—if the meatus is compressed antero-posteriorly, a proper idea of the size is made out ; the meatus should be able to take in at least a 24 Fr. sound. The urethra is next palpated as far as the perineum. A hard indurated area is evidence of fibrous tissue inside the lumen. Prostatic examination will reveal whether the prostate is diseased or not. Very often a person who is suffering from an enlarged prostate does not have a stricture and *vice versa*. Abdominal general examinations reveal signs of bladder distention when present, tenderness in the kidney area and signs of ill-health ; a dry tongue, occasional headache and a high blood-pressure are additional signs of a mild uræmia in serious cases. The diagnosis is confirmed by passing a rubber catheter No. 9 E size. If this will not go in, there is a stricture. The matter can be clinched by passing a gum-elastic catheter of No. 22 or 20Fr. size. If this is held up, doubtless there is a stricture.

TREATMENT OF URETHRAL STRICTURE :—In the treatment of stricture the permanent restoration of the canal to its normal diameter should be the aim. This is no doubt difficult of accomplishment ; for it is not usually possible to maintain permanently the restored condition and calibre of the urethra.

The methods of treating stricture are :—Dilatation and operative procedures such as internal urethrotomy, external urethrotomy and excision of the stricture. It is possible to treat a large majority of strictures of urethra by dilatation ; An urologist found that in his series of 1287 cases only 12 required operative treatment. In adopting dilatation treatment,hospitalization is avoided, the patient is ambulatory and carries on his regular duties ; and serious risks are avoided.

The effect of the dilatation upon the tissues is two-fold. There is an immediate or mechanical effect which at once increases the diameter of the urethra. This in turn allows the free passage of urine, drainage is improved and the accompanying infection and œdema decrease. Dilatation also produces slight mechanical tears in the deeper tissues ; as a result vascularity of the tissues increases and infection is thus lessened and absorption of the infiltration and sclerosis takes place readily.

The instruments used in the dilatation of strictures are :—Sounds, bougies and catheters of woven silk or nylon coated with varnish, rubber catheters and the Panendoscope.

Sounds are the usual metallic instruments either of the Lister or Clutton type and the usual numbers which should be used vary from 20 to 30 Fr. Metal sounds or catheters below the size of No. 10 E or 18Fr. are better avoided in the treatment of strictures.

Bougies and catheters of woven fabric, range from 22Fr. downwards. Filiform bougies are used for very small strictures and they have a female screw at the proximal end to which the male screw of a follower catheter can be attached for gradual dilatation of a stricture and for release of retention and for irrigation of the bladder.

Panendoscope is an instrument of great utility for examining the urethra, by which the opening in narrow strictures can be made out and the filiform bougie passed in accurately with the help of this instrument.

Before undertaking any instrumentation in a case of urethral stricture, it is necessary to prepare the patient. On the previous day or for 2 or 3 days before, he must be placed on sulphadiazine or sulphamezathine 2 tablets t.d.s. to prevent reactions to instrumentation. In cases, where instrumentation has to be undertaken urgently it is better to give an intravenous or an intramuscular injection of some sulpha-compound before dilating the stricture.

Proper lubrication of the urethra prior to instrumentation is important. Sterile paraffin or olive oil has been used, but the best however is some type of the water-soluble lubricating jellies, available in the market, *e g.*, the cetavlon jelly. The best way is to take the jelly in a glass urethral syringe and push it down the urethra. In addition to lubrication this jelly smoothens the folds of the mucous membrane up to the point of stricture and makes the passage of bougies easier.

Sterilization of most of the instruments used can be effected by boiling. In the case of parts of the Panendoscope or gum elastic catheters and bougies immersion for 15 minutes in 10 per cent formalin or 1 : 1000 mercury biniodide solution will be effective.

ANÆSTHESIA :—Dilatation of most cases of urethral stricture can be done without anæsthesia, provided there is proper lubrication and the instrumentation is performed gently. In some cases local anæsthesia will be necessary. Cocaine 5% solution, has been used with success but occasionally it has given rise to alarming reactions and so it is best avoided. I have found 1 : 1000 solution of nupercaine most satisfactory in my practice ; 10 cc. of this solution injected along with the lubricating jelly and kept in for 5 minutes with a penile clamp is very satisfactory. Intravenous pentothal $2^1/_2\%$ solution one gm. in 40 c.c. water *not the usual* 5%, is a very safe general anæsthetic to use, when necessary. Sometimes when the Panendoscope has to be used and the patient is hypersensitive, a low spinal anæsthesia using about 0·75 c.c. of Nupercaine (1 in 200 solution) is very helpful.

While passing sounds, the surgeon stands on the left side of the recumbent patient, and handles the instrument with his right hand, while he manipulates the penis with his left. But in introducing a metal instrument as a sound, the penis is grasped behind the glans by the thumb and forefinger and the tip of the instrument inserted into the meatus, while the shaft of the instrument lies transversely across the left Scarpa's triangle. The handle of the instrument, is now carried gently towards the patient's abdomen and onwards to the middle line, and gradually raised so that the point drops downwards and backwards. As the point passes down the bulbous urethra, the left hand lets go the penis and its fingers are used to support the perineum. The point of the instrument passes into the membranous urethra as the handle becomes vertical and swings downwards. Finally the handle is gently depressed between the thighs and pushed onwards into the bladder.

There is another method in which the penis is held parallel to the body and strong upward traction made on it as the sound is passed into the urethra. While the curved tip of the sound has passed the base of the penis, the penis and sound are gradually swung over an angle of 180° as the tip enters the bladder. It may be necessary to guide the tip, by placing the hand against the perineum.

When it is not possible to pass a sound, gum elastic instruments are used. In passing these, the operator has little power of changing the direction of the point of the instrument and the passage of the bougie or catheter depends upon its pliability. When introducing these, the penis should be kept on stretch. If the point of the instrument is arrested, it is withdrawn a little and again pushed onwards. If the attempt fails, a smaller instrument is to be used. Ultimately it may be necessary to pass filiform bougies. The correct way to pass filiform bougies is by a gentle probing movement combined with rotation, caused by rolling the guide between the finger and thumb. In some cases, the so called 'faggot' method may be employed. Two, three or four guides are introduced until one finds the opening and is felt to pass on to the bladder and when this occurs, the follow-up catheter is screwed on to the successful bougie. With the filiform bougie as a guide, the follow-up catheter is inserted into the bladder. The expanding tip of the follow-up-catheter dilates the stricture by gentle, steady pressure.

THE ROUTINE TREATMENT OF STRICTURES:—Dilatation is carried out in three ways :—(1) Intermittent dilatation; (2) Continuous dilatation; and (3) Rapid dilatation.

Intermittent dilatation is the best method. When the diagnosis of stricture has been made by passing a bougie or gum elastic catheter of fairly large size say No. 22Fr. smaller and smaller instruments are passed until a bougie is found which will pass

the stricture. It may lie loosely in the stricture and so gradually bougies, larger and larger in size are passed until we come to the size which fits tightly into the stricture. This size is noted and after an interval of 4 to 6 days, the size which fitted the stricture is again passed and is followed by one of larger size; this procedure is repeated each time increasing the size of the bougie or sound, one or two numbers at a time after similar intervals. The scale is gradually raised until the size of the stricture has reached 21 or 22Fr. above which gum elastic instruments are discarded as being too rigid and difficult to guide and steel instruments are employed instead. When the patient gives the history of dribbling and the clothes keep getting soiled, the surgeon should at once resort to filiform bougies, as the stricture must be of a very small calibre. After the filiform bougie has been passed as described above the lowest sized follower-catheter No. 12 Fr. is screwed on and pushed through the stricture. This allows relief of any residual urine and also allows irrigation of the bladder. After an interval of about a week a filiform bougie is again passed with the same precautions and this time a larger size follower-catheter is screwed on. This procedure is repeated every time until a No. 22 Fr. is reached, when steel instruments may be employed. During the ascent, the interval between the instrumentations should be gradually increased too. At 14 Fr. a week may intervene, at 18 Fr. a fortnight and at 20 Fr. 3 weeks and with the larger steel bougies, a month may be allowed to elapse. If things progress satisfactorily, the interval may be increased to 2 months, 6 months and finally once a year. The duration of treatment may take about 6 months and after that there may be no need for it except once in 6 months or a year. In most cases, it would probably be enough if a 23 Fr. sound can be passed in easily. There is no necessity for passing in bigger instruments and causing unnecessary damage.

Continuous dilatation is useful in cases in which retention of urine has complicated a very narrow stricture. The patient is confined to bed, and a filiform bougie is passed and fastened by tying a silk ligature round it and fixing the ends to the sides of the penis by means of adhesive plaster. This will be necessary only in cases where even a No. 12 Fr. follower-catheter cannot be passed in, along the passage of the filiform guide. The urine begins to trickle alongside the bougie in from $^1/_2$ to 2 hours. After twelve hours there is a little dilatation and a follower-catheter can usually be passed in, when the continuous dilatation is stopped and intermittent dilatation started.

Rapid dilatation.—This consists in forcing bougies of increasing size through the stricture in rapid succession until a large size is reached. This may be the only method possible owing to the lack of instruments but the result will be only a denser and more extensive stricture.

Complications of dilatation.—1. *False passage* :—At the first sign of a feeling that things are not going right, the medical man should desist from his attempts to get into the bladder, when dilating a stricture. Blood appears at the meatus when a false passage is made and there may be a sensation of grating. Immediately all further attempts must be suspended, an intramuscular injection of some sulpha-compound should be given and the patient should be watched carefully for any sign of extravasation.

2. *Infection* :—Urethral shock and urethral fever are due to infection and these complications can be effectively prevented by the administration of sulphonamides, penicillin and when necessary streptomycin.

Operative Treatment for strictures is not often necessary and it is believed that they occasionally cause a stricture. The three methods used are internal urethrotomy, external urethrotomy and excision of the stricture. In internal urethrotomy it is necessary that a guide should first pass through the stricture before the cutting knife is introduced and so the stricture can be dilated much better with filiform bougies and the follower-catheters without any attendant complications. External urethrotomy is called for, only when the stricture is impassable and very few strictures are impassable. It is again not very useful as only the simple stricture can be divided and in many cases the stricture is multiple. Lastly, even doctors with considerable experience in passing bougies sometimes find it difficult to pass instruments after external urethrotomy has been performed—the beak seems to get caught in the perineum. However, in traumatic strictures, the procedure may be of value.

Complications of stricture.—(1) Acute retention. (2) Septic complications as acute or chronic urethritis, periurethral abscess, acute or chronic prostatitis, epididymitis, cystitis, pyelonephritis etc. (3) Extravasation of urine. (4) Fistula. (5) Stone in the urethra or bladder. (6) Malignant growth in the urethra.

In acute retention due to stricture, a hot sitz bath and injection of one-fourth gr. morphine may relieve the condition as the congestive element and spasm play a large part in producing it. If the condition is not relieved, a gum elastic catheter is next passed to confirm the presence of stricture. If this does not pass the stricture, a filiform bougie is introduced as mentioned above and a small size follower-catheter relieves the retention. There is no danger in emptying a distended bladder completely in a case of stricture as the patient is ordinarily neither so old nor his kidneys so diseased, as in prostatic hypertrophy.

If even a filiform bougie cannot be passed, aspiration of the bladder can be done. The most suitable point for the puncture is an inch above the upper margin of the pubic symphysis in the middle line. A lumbar puncture needle may be used; the skin

should be first incised and then the needle introduced as otherwise there may be a danger of rupture of the bladder. Usually after a single aspiration there is relaxation of the spasm and an instrument can then be introduced and the bladder emptied.

Peri-urethral cellulitis and extravasation of urine.—Peri-urethral cellulitis and consequent extravasation of urine occurs spontaneously in certain cases of stricture of the urethra but sometimes this occurs after bold and careless instrumentation. In a toxic patient with swelling of the scrotum and penis with possible perineal induration, who is suffering from this serious condition, treatment has to be immediate to be effective. Multiple incisions with perineal urethrotomy together with a judicious use of the modern antibiotics will cure the condition.

Perineal fistulæ.—The history of people with multiple perineal fistulæ or the "watering pot" perineum as it is called, is usually this:—an attack or attacks of gonorrhœa in early youth, none of them properly treated; and epididymitis, prostatic or peri-urethral abscesss followed by a stricture. Frequent and unskilled instrumentation is known to have produced false passages. Even though advised to have frequent dilatations, the patient would have neglected it. The stricture would have closed, allowing a peri-urethral abscess to develop and sinuses to form. Later we get a perfect picture of the 'watering pot' perineum with sinuses. The urinary stream in these cases is conspicuous by its small size and multiple points of exit. The urine is foul smelling and thick. Attempts at instrumentation usually fail in these cases. The treatment in these cases is either a permanent suprapubic drainage or implantation of the urethra in the perineum. These procedures should be carried out only after the patient has been properly prepared for them. A suprapubic opening is quite compatible with a useful life but the better procedure would be to implant the urethra in the perineum. This can be done quite readily provided the stricture does not involve the entire bullous urethra. Advantage is then taken of the fact that the urethral lumen behind a stricture is always dilated and the urethra can be brought out without tension until it lies in the posterior angle of a median perineal incision. This would entail the patient having to urinate only in the squatting position but, as it gives permanent results, it is worth having.

Stricture of the female urethra.—Strictures occur also in the female urethra, and may be congenital, inflammatory or traumatic. Congenital strictures usually occur at the meatus while the inflammatory ones are usually found just inside the meatus. Traumatic strictures, very often occur during confinement, and may occur in any location.

Symptoms are quite similar to those of chronic urethritis. In addition to frequency, burning and urgency, voiding may be difficult and dribbling or partial incontinence occurs occasionally.

The diagnosis is made when examining to determine the cause of the above-mentioned symptoms. Narrowing of the meatus may be recognised by inspection. A stricture is present if No. 23 Fr. sound meets with resistance. The treatment is gradual dilatation. Meatotomy may be necessary in dense strictures of the meatus. The most important point to stress in the treatment of strictures is that undue bleeding at the time of dilatation means error in treatment which will result in causing a tighter stricture. The ideal to aim at, is to see that there is no bleeding at all, during dilatation. The treatment of strictures of the urethra is generally successful except in (1) cases caused by extensive trauma such as those associated with fractures of the pelvis and loss of urethral continuity; (2) the non-cooperative patients; and (3) those who would not report regularly for observation and take suitable treatment.

It is important to tell patients that there is no permanent cure for strictures, that "once a stricture is always a stricture" and that the condition requires treatment at least once a year; and it is very necessary to impress on them the importance of reporting regularly to their doctor. It is to be hoped however, that with the advances in antibiotic therapy for treatment of gonorrhœa, inflammatory strictures which form the large majority of strictures of the urethra, will gradually diminish in frequency and the distressing conditions like the watering pot perineum will be relegated to medical museums, as possessing only antiquarian interest.

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Hyaluronidase Helps to Prevent Kidney Stones

Butt *et al*, treated 24 persons in whom kidney stones previously formed at a rapid rate; they injected the enzyme mixed with normal saline, subcutaneously every 24 to 48 hours, and were able to prevent the formation of new kidney stones and the further growth of existing stones in 19 cases; in four patients the size of the existing stones became smaller and less dense.

The formation of kidney stones is the result of the clumping together of crystalline matter in the urine. Ordinarily this is prevented by the presence of a colloidal material that is found to coat every one of the crystals. This coating is capable of preventing the tendency to clumping. In patients with a tendency to kidney stone formation, hyaluronidase appears to promote this protective coating of the crystals. The effect of the drug is mainfest in half an hour, and lasts for twenty four to seventy two hours. The dosage should be varied to suit individual needs. Adequate dosage is essential as with smaller doses, "the result may be the very reverse of that intended". In contrast to most other medications, an overdose of hyaluronidase does not produce adverse effects.—(*J. Am. Med. Assoc.*, 15-11-1952).

RECENT ADVANCES IN THE TREATMENT OF CIRRHOSIS OF THE LIVER*

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DURING recent years there has been an increase in the incidence of cirrhosis of the liver. Alcohol used to be blamed as a probable cause, but in India where prohibition is now in force and where we come across several patients, who have been absolute tea-totallers; we have to consider other factors as probable etiological agents. Malnutrition is one of the chief factors responsible for this disease. Epidemic hepatitis may also be a factor.

TREATMENT :—*General* :—Certain general measures are applicable to all hepatic diseases. The probable cause has first to be treated. Secondly, every patient with liver disease is to be kept at rest in bed. The use of drugs that may be toxic to the liver should be avoided. Sulphanilamides and barbiturates impair the function even of the normal liver and hence will be a great strain to the damaged liver.

Constipation is also a strain on the liver and hence laxatives may be prescribed. Bile acids (such as dehydrocholic acids) may be used in 3 to 5 grain doses, three times a day. Bile acids are preferable to bile salts, because they produce choleresis and decrease the viscosity of bile. Among the laxatives, it is preferable to use effervescent ones like sodium phosphate or magnesium citrate. Magnesium sulphate is liable to irritate the intestinal tract.

Glucose D therapy :—Glucose D, or Dextrose is one of the best drugs for use in the treatment of cirrhosis of the liver. The rationale of this therapy is that it helps to maintain the glycogen contained in the liver cell. By injection of dextrose hyper-glycemia is produced. The glycogen or glucose needed for the system, can be supplied without depleting the glycogen content of the liver. The methods suggested are :—When ascites is present, 50% glucose or dextrose is given (100 to 200 c.c.) daily continuing until the output exceeds the intake. After this 300 to 400 c.c. of 25% glucose may be given daily until there is another demonstrable increase in the output. The strength is then reduced to 10% and the volume is increased to 3 to 4 thousand c.c. daily. During this treatment, if the intake is more than the output, the concentration may have to be reversed to 25% or 50%. Is oral therapy better than intravenous therapy ? Can the patient take the necessary amount of sugar or carbohydrate by mouth ? The proper amount of carbohydrate or sugar will be that which will raise the blood sugar to the extent necessary to suppress the hepatic sugar output. The normal liver responds to the usual post-prandial hyper-glycæmia following

* Specially contributed to THE ANTISEPTIC.

a high carbohydrate-intake. But a toxic liver requires a higher blood sugar concentration to inhibit gluconeogenesis. Cori and Cori, pointed out that for a normal liver, the blood sugar concentration and not the amount of dextrose administered, should be regarded as important for glycogen deposition. Hyper-glycæmia may produce glycosuria but this need not be a bar to the treatment. Wakin and Mann, have shown that the regeneration of hepatic tissue begins after injury, in the islands of normal cells supplied mainly by arterial blood, while the cells supplied by areas in the portal vein blood may be too badly injured to regenerate. Some physicians advocate insulin and glucose ; but the use of insulin will defeat the object with which glucose is given intravenously. Insulin injection has no additional hepatic effect. On the other hand, it will produce glycogen deposition in the muscle. Hypertonic glucose not only acts as a factor in liver repair but also helps as a diuretic.

Aminoacids :—Eckhardl has shown that the intravenous drip of 500 to 1000 c.c. of a 10% aminoacid solution every day is a good source of nitrogen and lipotropic substances which produce good clinical improvement. It given orally the absorption is very poor, Hydro-proteins and amigen are commonly used for this purpose.

Vitamins :—The role of vitamin therapy in chronic liver disease is not clear. It has become a routine with many physicians to use B complex. But this will be useful only when a specific deficiency exists. Further, the use of nicotinic acid in the presence of a fatty liver is harmful. This vitamin is excreted as a methyl-derivative which has been demonstrated by animal experiments to be harmful. Mc. Henry has shown that thiamine chloride may promote fat infiltration under certain conditions. The judicious use of Vitamin B complex is recommended by Gyorgy, as the massive use of any element of the B complex may produce a reverse effect. Vitamin B_{12} is recommended but its therapeutic effect has not been explained. Ascorbic acid is helpful in protecting the liver against hepatic toxins. A and D are poorly absorbed in liver disease and hence they are administered.

Administration of Vitamins :—Vitamin B is furnished by dry yeast in doses of 30 to 50 grams a day or by liquid concentrates and supplemented by parenteral administration of thiamine, 10 to 20 mg. and nicotinamides 50 to 100 mg. Liver is also given orally 30 c.c., thrice daily or by injections of crude liver extract 3 to 5 c.c., twice or thrice a week.

Citrus fruit juice 250 to 360 c.c. is a good source of vitamin C daily. Vitamin A is given in 5000 I.U. and D in 1000 I.U. twice daily. Vitamin K is the precursor of prothrombin. In liver disease there is inadequate absorption of vitamin K and hence there is a hæmorrhagic tendency. Vitamin K is given parenterally in 10 mg. doses daily. If the liver damage is severe, there is little response

to Vitamin K therapy and in such a condition 500 c.c. of undiluted plasma infusion will relieve the hypoprothrombinæmia.

The use of salicylates is to be avoided in liver disease as they produce hypoprothrombinæmia and a hæmorrhagic tendency.

Lipotropic substances:—Choline or methionine 1 to 2 gm. daily within about 4 to 6 weeks will rid the liver of all fat. Crude liver extract in addition to its lipotropic effect, appears to aid in detoxication and is very useful in cirrhosis of the liver. Liver extract may be given I.M. or I.V. as intraheptal. The use of ACTH in cirrhosis of the liver has been disappointing.

Retention of fluid and salt:—The factors responsible for the retention of fluid with ascites and œdema are not known. The following are possible causes:—portal hypertension, increased sodium retention, decreased colloidal osmotic pressure of blood and an increase in antidiuretic substances. According to Starling the volume of extra-cellular fluid depends on a balance between capillary hydrostatic filtration-pressure and colloidal osmotic pressure of the blood.

Janeway tried salt-poor-albumin intravenously for the treatment of cirrhosis of the liver. The dose recommended is 20 to 100 gm. of salt-poor-albumin per week. The usual dose is 100 c.c. of 25% solution, intravenously in about 45 minutes once or twice daily. There is evidence to show that a considerable part of the serum-albumin administered enters the ascitic fluid and establishes an equilibrium between the vascular and ascitic fluids.

In view of the marked salt retention accompanying ascites and œdema, Eisenmenger has shown that a salt-free diet helps in diuresis.

Paracentesis abdominis, may be done without greatly interfering with the general condition of the patient. Neither too much nor too little fluid should be withdrawn at a time. A local anæsthetic is preferable to prevent peritoneal shock. Hypodermic injection of atropine and adrenaline should be ready at hand to combat shock.

Diuretics 1 to 2 c.c. I.M. may be used at weekly intervals. This will delay the re-accumulation of the ascitic fluid.

Diet:—This should be generous and the food must be well-regulated. An ill-regulated diet chart is depressing to the patient. The foods allowed are:—(1) Cereals; (2) bread; (3) cereal substitutes like vermicelli; (4) soups; (5) meat; (6) fish; (7) cheese; (8) eggs; (9) vegetables like cucumber, raw onions and radishes; (10) potatoes; (11) fruits; (12) sweets; (13) dessert; (14) beverages 4 glasses of milk per day with tea and (15) butter. Oily and greasy foods should be avoided.

Hepatic failure, coma and jaundice:—Bed rest is essential, Intensive intravenous dextrosal, salt-poor-albumin, protein-hydro-

lysate, liver-extract, blood transfusion and plasma in judicious combination are helpful. Oxygen may have to be given by BLB mask.

Summary of treatment.—1. *Diet*:—High protein, moderate carbohydrate and low fat diet. 2. *Lipotropic treatment*:—Choline and methionine. 3. *Antianaemic treatment*:—Crude liver extract and vitamins. 4. *Hypertonic dextrose* therapy.

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The Adrenal Cortex in Liver Disease

Adrenal cortex therapy in cirrhosis of the liver has been the subject of two recent reports. Pelner and his coworkers of the Brooklyn Hospital, used Lipo-adrenal cortex as the cortical extract along with the aqueous adrenal cortex extract in 3 cases of hepatic coma with dramatic results. They then used the lipo-adrenal extract in 12 additional cases of cirrhosis of the liver, ten cases of virus hepatitis, and three cases of ulcerative colitis, also in three cases of radiation sickness. They used the standard treatments in addition, but they definitely noted that the cortical extract added something of value, in these cases, and produced salutary effects.

The rationale for the use of adrenal cortex extract related to (1) endocrine findings in cirrhosis of the liver, *viz.*, (*a*) increased accumulation of æstrogenic hormone and (*b*) evidence of a depletion of adrenal cortex activity in cirrhosis, (2) the disturbance of water balance in patients with cirrhosis of the liver and (3) the diuretic action of the adrenocortical hormones which are necessary for the maintenance of a normal renal glomerular filtration rate and normal renal plasma flow and also for inhibiting the renal tubular re-absorption of water.

The mode of therapy:—In patients with hepatic coma, the dosage of Lipo-adrenal cortex extract was 5 c.c. per day intramuscularly in addition to 10 c.c. of aqueous adrenal cortex hormone added to the glucose infusion. No more than 1000 c.c. of fluid *plus* an additional amount equal to the amount of urine passed, may be safely administered if severe oliguria is present. In patients with cirrhosis of the liver lipo-adrenal cortex extract is given in conjunction with a nutritious diet (high protein, high carbohydrate diet) and additional supplies of B complex vitamins and lipotropic substances; other tried and effective remedies must be given in addition. Injections should be given until the acute phase is over; this will ordinarily require a minimum of three months of treatment.

It is important to note that the product used in this study was "Lipo-adrenal cortex" and *not* 'Cortisone'. *ACTH and cortisone in the usual dosages used today are contraindicated in diseases of the liver.* Adequate data are now available to substantiate this inference. Lipo-adrenal cortex is an oil extract of whole hog adrenal glands and also partly derived from synthesis. From this extract has also been prepared an amorphous fraction, which is highly active in sustaining life in adrenalectomized animals. Webster (*Ann. Int. Med.*, 33, 854) recently reported spectacular results on the use of Lipo-adrenal cortex therapy in cirrhosis of the liver. In the authors' experience, the results though not so dramatic were remarkable enough to warrant the use of the extract routinely as a valuable addition to other treatment.—(*Am. J. Digest. Dis.*, 19, pp. 286–294, Sep. 1952).

CHEMOTHERAPY OF MALARIA*

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PART I.

MALARIA, with its high transmission rate, and its often chronic course studded with acute phases, presents an extremely complicated picture to the uninitiated. Before even considering the systematic treatment of the disease therefore, it is necessary to give a brief account of the malarial parasite (Plasmodium) and its life cycle in man (the host), and the mosquito (the vector), and to point out the stages at which the parasite is most susceptible to attack by the various drugs. The accompanying diagram should help in following a set of names which appear somewhat confusing at first sight.

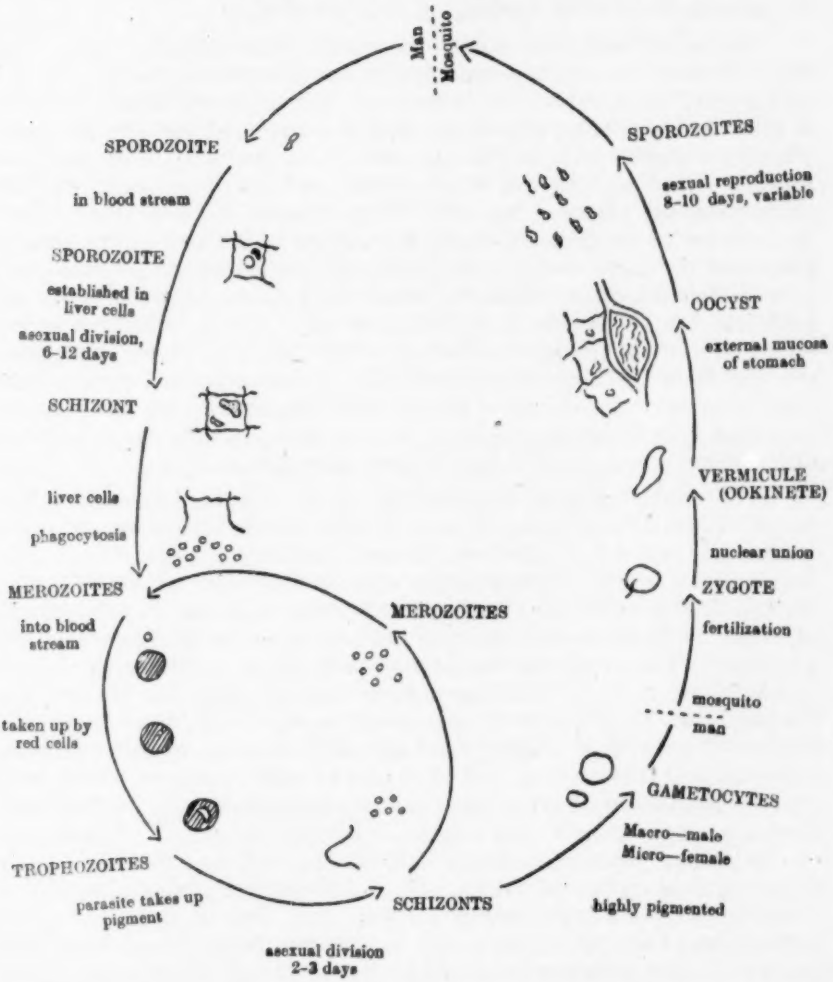
Initial Infection—The sporozoite.—The plasmodium life-cycle is a true cycle, and it must be broken into, in order to provide a starting point for the description. The most convenient starting point is the sporozoite, which is the resting stage and is also the form in which it is transferred from the infecting mosquito to the human host. Sporozoites are injected into the blood stream where they circulate briefly and disappear ; no drug has been found active against sporozoites during their fleeting free existence in the human body. The vanishing sporozoite was one of the long-standing mysteries of malaria, and presented a puzzle for nearly fifty-years after the remainder of the cycle had been set together. Experiments with animal and bird malaria proved misleading, since these parasites choose a fundamentally different site for their development in humans. However, circumstantial evidence gradually accumulated, and when this was sufficient to justify such an experiment, a human volunteer was given a massive sporozoite infection, and a few days later he was subjected to liver biopsy. Thus it was found that the sporozoites enter the cells of the liver parenchyma, that is, the central, active cells of the liver as distinct from the ducts and connective tissues. Within a few days of entry, the sporozoite nucleus, had divided into many thousand parts, the cell being then known as a schizont—in this case a liver-schizont. By this time the schizont was "ripe", in from six to twelve days, each of these nuclei had become equipped with protoplasm and became a separate entity, the merozoite.

Up to now the malarial infection is in most cases preclinical, as the symptoms during this period, if they exist at all, are limited to headache, slight fever and general malaise. The pre-erythrocytic stage, with the infection concentrated in the liver, the patient remaining symptom-free, would be an ideal one for applying chemotherapy which, if effective, could almost be called preventive

* Specially contributed to THE ANTISEPTIC.

treatment. Of the many anti-malarials which will be mentioned, however, only proguanil and the group of 8-aminoquinolines appear to be at all effective at this stage; of these, the 8-aminoquinolines are effective only in toxic doses, and the value of proguanil is reduced by the appearance of resistant strains of *plasmodium*.

Fig. 1.—Life Cycle of Human Malaria Parasite



The parasite now has the form of a ripe schizont, containing large numbers of merozoites, within a swollen liver cell. The cell and the schizont then burst, and the merozoites are released. They suffer various fates. Some are destroyed by the phagocytes which invade the area. Others appear to re-enter the liver cells, where it is

thought, they set up the secondary infection which causes the well-known relapses with vivax malaria ; falciparum parasites do not cause this type of relapse, and after the rupture of the schizont, further infection of the liver must come from another injection of sporozoites from a mosquito. Many of the merozoites, perhaps the majority invade erythrocytes (red blood cells) in the liver sinuses. These invaders are given the new name—trophozoites, or feeding organisms, from their feeding on the red cells.

Blood infestation—The trophozoites.—Trophozoites take 48 to 72 hours to mature and during this time the invaded red cell changes its appearance considerably. The pigment coagulates and is seen as fine specks, and some of it is consumed by the parasite, which grows and almost fills the cell. On maturity, the parasites and the attacked red cell break down, and the debris and further merozoites are released into the blood stream. This is now "*real*" malaria—the preliminary signs, the feeling of intense cold, then of heat and the final sweating stage are all associated with the appearance of these foreign bodies in the blood. The collection of the malarial debris appears to be done by the spleen, which is often enlarged because of its excessive activity and discoloured by pigment derived from the large amount of hæmoglobin collected from broken erythrocytes. An enlarged spleen shows sensitivity to the parasite and an active defence, whereas one of normal size may indicate either non-immunity or a high degree of resistance.

The periodicity of malarial fevers is simply explained. The trophozoites do not cause much trouble while they are growing within the red cell, so that the patient feels quite well. When the trophozoites mature, every other day in tertian malaria (benign tertian due to *P. vivax ;* malignant tertian due to *P. falciparum*) or every 72 hours in the quartan malaria due to *P. malariae*, the invasion of the blood by merozoites and debris produces the acute phase of the disease. It is sometimes found that the fevers are irregular, or that acute fevers occur every day ; this is readily explained when it is realized that the development of the parasites may not be synchronous, and that two or more groups, each with its own paroxysm of fever, may mature independently. Sometimes during a single attack, and usually in recrudescence or relapse, one of the groups gains ascendency and the fevers then show the periodicity typical of the infection. In *P. falciparum* malaria, which is suitably termed "sub-tertian", there are frequently no regular paroxysms ; there are often quite noticeable prodromal symptoms, *i.e.*, symptoms which occur during the so-called incubation period and before the parasites have left the liver. On account of these features, sub-tertian malaria is often difficult to recognise.

Control of the blood infestation—Recurrence.—The clinical condition during a paroxysm is serious, and an extended series of bouts of fever very debilitating, so that some form of treatment

is often essential. Fortunately, nearly all the anti-malarial drugs are effective at this stage and, except for a suspected tendency of quinine to precipitate hæmoglobinuria (blackwater fever) in *P. falciparum* malaria, and of proguanil to lead to resistance in certain strains, the difference is primarily one of degree or speed of action. The 8-aminoquinolines are not used in the treatment of the acute attack, however, as their therapeutic dose is very near the toxic one; their principal value has already been mentioned. If left untreated, an attack of malaria may go on for weeks, until the body's natural defences overcome the invader or, in a few cases, until the body succumbs to the infection or to any of the complications, *e.g.*, anæmia, which are natural consequences of the disease. The longer an attack goes on, the stronger (in general) becomes the host's defence and the more immune he becomes to subsequent reappearance of the disease. For this reason, drug treatment may be delayed a little, if there is no great danger to the patient. If the parasites disappear entirely from the blood, an attack may still occur without the patient's being bitten again, through the maturing of another batch of schizonts in the liver; this is termed a relapse, and may happen weeks, months or years after the initial attack. Relapses cannot occur with *P. falciparum* malaria, but recrudescences are not uncommon.

Anæmia has been mentioned as a complication of malaria. The red cells invaded by the trophozoites are destroyed and some of the uninvaded cells are damaged or destroyed by an unknown factor, but the demands for new cells may not be great. The parasites of quartan malaria, for example, prefer to attack the older red cells, those which are ready for the scrap heap anyway. *P. vivax* organisms on the other hand, prefer younger erythrocytes, and their blood-destroying effect is increased by the fact that they appear to prevent in some way the transference to the blood of reticulocytes (immature red cells) from the marrow where they are formed. *P. falciparum* appears indifferent, but anæmia is a frequent complication owing to the extremely high blood density which this parasite might develop.

The diagnosis of malaria is usually confirmed by finding parasites (the trophozoite of each species has a distinctive appearance under the microscope) in a sample from the circulating blood. In *P. falciparum* malaria however, this is not always a reliable guide, since the patient may be heavily infected without any signs being found in the peripheral blood. In such a case the parasites appear to concentrate in the internal circulation—a finding which provides a key to the dangers of cerebral malaria and blackwater (hæmolytic) fever which are encountered with *P. falciparum* malaria, but seldom with the other type.

Immunity to malaria has already been mentioned. The mechanism of this is not however, well known but in the main it is

believed to be due to the natural defences of the body being "stripped for action", and the phagocytes being quick to invade the liver sinuses and consume the infecting organisms the moment they break out. This is unlikely to be the whole answer, however, for immunity to one species or strain does not necessarily involve increased resistance to others. Also, a form of immunity in which the patient has learned to tolerate a heavy blood infestation without showing symptoms cannot be strictly compared with one in which the patient's hypersensitive defence prevents the establishment of the blood parasites; in this latter form of course, immunity may persist long after the eradication of malaria, and may be present in some fortunate individuals before exposure.

Reinfection of the mosquito—Gametocytes.—By the host's defence or by plasmodicidal drugs, then, the parasites in the blood are mastered and rendered temporarily innocuous, and the attack is over as far as the patient is concerned. And what of the parasite? To continue its existence it has to return to the mosquito in yet another form, since the asexual merozoite cannot develop outside its normal warm-blooded environment. After several erythrocytic cycles, therefore, a further metamorphosis takes place, resulting in the production of the sexual forms known as microgametocytes (male), and macrogametocytes (female). These are also trophozoites, that is, they feed on the red cells. When a female mosquito bites the infected individual at this stage, some of these gametocytes are drawn into the insect's stomach when it takes its blood-feed. The microgametocyte (male) then produces small processes which detach themselves and remaining still in the mosquito's stomach, fertilize female cells. The next few stages (each with its own rather cumbersome name) culminate in the formation of a cyst, called the oocyst, just within the outer mucous membrane of the stomach. Sexual reproduction then takes place, and in a period of from one to three weeks, depending on the temperature, the oocyst bursts and sporozoites are set free. Many of these find their way into the mosquito's salivary glands, where they remain ready to be injected when the insect bites her next victim.

Two further sites of drug action have been passed over during this description of the last part of the cycle, but they can conveniently be mentioned here. Mepacrine and quinine have a slight action against gametocytes, the younger forms being chiefly affected, whilst pamaquin and the 8-aminoquinolines in general have quite a pronounced action against them. Proguanil has a unique action; without affecting the gametocytes or their transference or their fertilization, it inhibits the development of oocysts in the mosquito's stomach.

PART II

Anti-malarials.—The drug used in the chemotherapy of malaria cannot be easily classified on the basis of their mode of

action or even on their site of action. The only effective classification then remaining is a chemical one. Fortunately this is quite satisfactory, since the anti-malarials with the exception of two recent additions, fall into well-defined groups, stemming from the naturally occurring cinchona alkaloids. The international background to the anti-malarial campaign is recorded in the great variety of proprietary names which most of them have received; *Table I* should be useful in helping to prevent misunderstanding, since most of the names on this list are met with in reports.

In general, the doses quoted are those in common use for adults. The doses for children and for patients in poor general health are to be adjusted accordingly; from one-third to one-sixth of the adult dose is given up to the age of two years, with a graduated scale of dosage depending upon the age, up to fifteen years.

Quinine.—Quinine is still an important drug. It is parasiticidal at only one stage of the cycle, the trophozoite stage. Quinine does not prevent infection, since it does not act until the parasites have left the liver and become ripe in the blood; nor does it prevent re-infection of the mosquito, since it has no significant action against gametocytes. The effect of quinine is thus, simply to suppress or reduce the blood infection; if taken regularly it may be expected to prevent the parasites from reaching a concentration

TABLE I

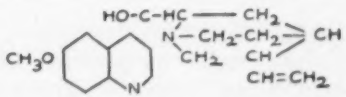
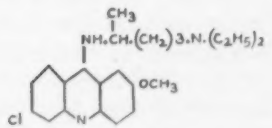
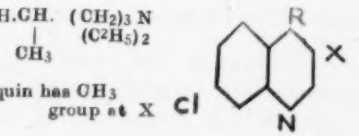
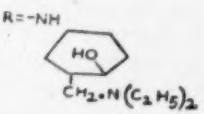
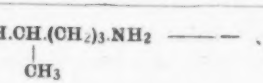
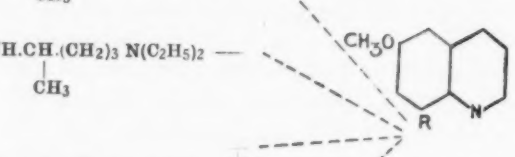
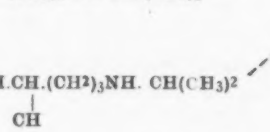
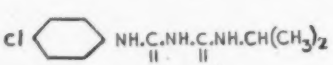
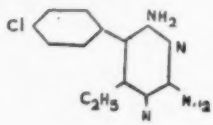
Drug	Chemical type	Synonyms	Formula
Quinine	Alkaloid	Chinin	
Mepacrine	Acridine	Acriquine, Erion, Atebrine, Haffkinine, Atebrin, Italchina, Chemiochin, Malaricida, Chinacrin, Metoquina, Crinodora, Plasmacrin, Quinacrine	
Chloroquin	4-Amino quinoline	Aralen, Tanakan, Nivaquine B, SN 7618, Resochin, 3377 RP	
Sontoquin		Nivaquine A, Santoquine, Nivaquine C, Sontochin, Santochin, SN 6911, 3038 RP	Sontoquin has CH_3 group at X
Camoquin		Amodiaquin, Miaquin, Cam-aqi, SN 10751	

TABLE I—(*Contd.*).

Drug	Chemical type	Synonyms	Formula
Primaquin	..	Sn13272	
Pamaquin		Aminoquin, Beprochin, Gamefar, Plasmochin, Plasmocid, Palsmoquine, Praequin, Quipenyl	
Pentaquin	8-Amino Quinoline	SN13276	
Isopentaquin		SN13274	
Proguanil	Diguanide	Chlorguanide, Diguanyl, Drinupal, Guanatol SN12837, Paludrine, Paluail, Tirian M4888	
Pyrimethamine	Pyrimidine	Daraprim, Maloeide	

in the blood high enough to cause symptoms. For treating the acute attack, quinine is reliable and quick-acting. Orally, the bisulphate is usually given in doses of 0·5 gm. daily for prevention (or rather suppression) and from 1·0 to 1·5 gm. a day for therapy, which should be maintained for five to seven days after the fever has subsided. In cerebral malaria it is usual to give quinine dihydrochloride intravenously in doses of 500 mg. at a rate not exceeding 50 mg. per minute. The same quantity of quinine, usually as the monohydrochloride, has been given intramuscularly for cerebral and other forms of malaria.

Poisoning due to excessive doses of quinine, is rare probably because of its bitter taste, but in sensitive persons even small doses may produce symptoms of cinchonism-giddiness, tinnitus, deafness, disturbance of vision, and urticarial skin reactions. Local necrosis occasionally follows its intramuscular injection. Much more serious is the fact that quinine may precipitate hæmoglobinuria in *falciparum* malaria and although the connection is unknown, blackwater fever is so dangerous that the routine use of quinine in this type of malaria is contraindicated. For cerebral malaria however, whether

due to *P. facliparum* or not, quinine is still the most reliable and the most-used therapeutic agent in treatment.

The 8-aminoquinolines:—Pamaquin was the first synthetic anti-malarial to be used clinically; it was introduced in 1926 as a result of the work of German scientists on substances chemically related to quinine, the formula of which had just then been elucidated. Pamaquin proved too toxic in effective doses and its use had to be abandoned soon after the initial trials. Recently however, pamaquin and the 8-aminoquinolines in general have again been brought into use; it has been found that, although not particularly effective against the blood-forms of the parasite, they are singularly lethal to the parasites in the liver, and so provide *possible prophylaxis* against all forms of malaria, and also a means of eradicating *vivax* malaria. The word "*possible*" is used *advisedly* since in non-toxic doses, the efficacy of the drug is limited; its effect appears to be potentiated by quinine. The newer drugs of this group, pentaquin, isopentaquin and primaquin appear to be a considerable improvement on pamaquin, being approximately twice as active for a similar tendency to produce toxic effects. Primaquin is widely used at present and is reported to be the best; detailed information about its use has not however, been published. Various dosage schedules have been used for these drugs; the normal dose, which is not very far removed from the maximum tolerated one, is 10 mg. three times a day. Common toxic symptoms are gastro-intestinal discomfort, and cyanosis; a rarer but serious result is hæmolytic anæmia. Concurrent administration of mepacrine or certain other drugs appear to increase the toxicity of the 8-aminoquinoline derivatives.

Mepacrine:—The German workers, inspired and guided by the partial success of pamaquin, a short time later produced mepacrine, which has the side-chain of pamaquin attached to an acridine, instead of a quinoline nucleus. Mepacrine was found effective against blood forms of avian and human malaria but it was not thought to have any advantage over quinine, while it has certain disadvantages, notably that of causing skin discolouration. Mepacrine therefore, was not seriously considered as a substitute until supplies of quinine were stopped during the war, at a time when large numbers of non-immune men were exposed in malaria-endemic areas, and so mepacrine was selected for mass use as an anti-malarial. Suffice it to say that after a clinical trial involving over a million previously non-immune men under military field conditions in the most malarious areas of the world, mepacrine emerged victorious with an almost unshakably sound reputation.

Mepacrine is largely stored in the tissues, from which it is gradually released into the blood. The usual method of prophylactic administration is, therefore, to give "a loading dose" of about 0·3 gm. a day, for a fortnight, followed by 0·1 gm. daily, thereafter.

For the treatment of an attack up to 1 gm. divided into three doses may be given daily. Mepacrine is also used for treating cerebral malaria; it is given intramuscularly in the form of the methanesulphonate, and may be followed by nicotinic acid and glucose injected intravenously. Apart from skin discolouration, side-effects are not common. Evanescent gastro-intestinal disturbances and slight mental symptoms are the most frequent; severe mental symptoms and serious skin reactions occur very rarely.

The 4-aminoquinolines:—These drugs resemble mepacrine in their physiological and parasiticidal actions. Camoquin is now regarded as the most effective of the drugs, but chloroquin is the most commonly used and will therefore, be discussed here as representing the whole group. It is stored in the tissues in the same way as mepacrine but has the advantage over the latter, in that it is colourless and æsthetically more acceptable. Occasional side-effects of chloroquin are recorded, *e.g.*, pruritus, gastro-intestinal disturbance, and blurred vision. The normal dose for prophylaxis is 300 mg. once a week—a safe but not entirely effective dose. For the acute attack, the dose recommended is 600 mg. followed by 300 mg. six hours later and 300 mg. on each of the next two days. Single doses of up to 1,500 mg. have been recommended, this dose like the others, being calculated on the equivalent of the chloroquin base. The 4-aminoquinoline derivatives appear to be the most effective for single-dose treatment; for this they are preferred to proguanil, and have proved greatly superior to quinine.

Proguanil:—Proguanil is a happy result of bold chemotherapeutic speculation. The rather stereotyped structure of the earlier anti-malarials is here extensively modified, and the chemical difference is reflected in several unusual therapeutic properties which it possesses. In addition to being active against blood-forms, it actively attacks the liver schizonts and (as has been mentioned earlier) has a valuable action in stopping the development of oocysts in the stomach of the mosquito. The low toxicity of proguanil renders it suitable for prophylaxis, and for this purpose it has achieved widespread use. It may be given in doses of 100 mg. daily, but 100 mg. twice weekly or 300 mg. once weekly has been recommended, and appears reasonably satisfactory. To treat the bout of fever, a single dose of 300 mg. may be used in semi-immue subjects, but in other cases a more thorough course is indicated, consisting of 100 mg. three times daily for ten days. Toxic symptoms are rare with these doses; minor gastric complaints may be expected with doses of 1,000 mg. a day, and hæmaturia may also be produced. Proguanil is a most valuable drug, although some limitation is placed upon it by the discovery that certain strains of *P. falciparum* and *P. malariae* are resistant to its action or become so during treatment.

Pyrimethamine:—The latest weapon of the antimalarial campaign has appeared recently under the name of Daraprim. Its

reported use has so far been limited to semi-immune communities, where malaria is endemic, but it appears to be effective in doses smaller than is usual with other anti-malarials. 25 mg. weekly is a recommended prophylactic dose, and 50 mg. (on two successive days, if necessary) may be expected to control an open attack of malaria.

COMBINED TREATMENT:—A combination of quininine and one of the 8-aminoquinolines (primaquin is the most extensively used at the moment) offers the best treatment that is available for eradicating *P. vivax* malaria, the form which is especially troublesome in that it may recur long after the victim has left a malarial area. The usual course of treatment is to give the maximal dose of an 8-aminoquiline derivative, 10 mg. three times daily, reinforced with about thirty times the weight of quinine.

Another combination occasionally used is mepacrine and proguanil; the small dose of proguanil adds an "edge" to the treatment, whilst mepacrine is reliable in that it will take care of any strains resistant to proguanil.

Other mixtures do not appear to have any advantage over larger doses of a single drug, as their site of action is similar and their toxic effects probably additive.

No article would be complete without mention of the great anti-mosquito campaign which is putting malaria into rapid retreat. The new insecticides D.D.T. and B.H.C. (benzene hexachloride) are expanding the areas where malaria is no longer a danger, and their efficacy is such that if the campaign continues without interruptions, malaria will eventually disappear as a disease. But that will be many years yet; for the time being, malaria is still the world's most prevalent disease, and an understanding of its comings and goings is still essential, when in or near malarial areas.

Camoquin

This new synthetic anti-malarial was used in the treatment of 358 cases of malaria in La Plaz, of which 108 were due to *P. falciparum*, 232 to *P. vivax* and 18 to both parasites. Eightyfour per cent of the cases were chronic with erythrocyte counts varying between 2,300,000 and 4,800,000 per cmm. The final procedure adopted was to give a single oral dose of approximately 10 mg. per kilogram of body weight (0 8 gm. for an average adult patient).

Disappearance of headache was rapid and 24 hours after giving the dose the blood of 80 per cent of patients was negative for parasites, while 4 hours later, that of the remaining 20% had also become negative. With this dose, the gametocytes of *P. falciparum* persisted for 48 hours or longer unchanged but larger doses proved to be gametocidal. Only 2 patients failed to respond quickly and both had coincident intestinal disorders, which might have made absorption difficult or inadequate. The relapse rate in this series for *vivax* malaria was only 10% whereas with the normal treatment in this area it used to be 21%. Camoquin was found by Payne *et al* to be non-toxic and could be given without mishap in the presence of renal, hepatic, pulmonary or cardiac disease.—(*Am. Jour. Trop. Med.*, 31, *Abst. W. Med.*, July 1952).

CALCIUM PANTOTHENATE IN PARALYTIC ILEUS*

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PANTOTHENIC acid or the "Filtrate factor" of B-complex vitamins, is one of the new, or less well-known components of the family. Some of its known actions have been proved only in animals particularly the rat, in which the syndrome of deficiency of this factor has been worked out. Hæmorrhages in the respiratory tracts, adrenal glands, liver parenchyma, nasal mucous membrane and the intestinal tract have been consistently produced at will by feeding rats on diet devoid of pantothenic acid and the entire picture could be reversed at will by exhibiting the deficient "Filtrate factor" at the proper time. These rats also showed achromotrichia and a great distention of the small bowels with paralysis of the peristaltic movements which regained normal motility if pantothenic acid was exhibited before death (Jurgens and Pfaltz, 1944).

This factor is concerned in the formation of acetylcholine. The therapeutic use of this drug has not been recommended up till now by any responsible authority on the basis of a complete and controlled pharmacological study. We have had clinical reports of its use in "Burning Feet Syndrome" by C. Gopalan (*I.M.G.*, Jan. 1946, p. 22) and G. S. Whitfield (*B.M.J.*, 1947, Aug. 22, p. 165) naming this syndrome as "Gopalan Syndrome" and in postoperative paralytic ileus by J. E. Jacques (*Lancet*, Nov. 10, 1951, p. 861).

As the use of pantothenic acid as a therapeutic agent has not yet become wide, its dosage also is undetermined. There is very little information about the adverse effects of overdosage in man. Its minimum daily human requirements are not known. There is no determined I.U. or dose limit. It occurs naturally in all those foods where B-complex vitamins are found, *e.g.*, liver, wheat and rice bran, peanut meal, brewers' yeast, etc. A synthetic preparation, as a soluble calcium salt for parenteral administration has been marketed by a firm in India. It is stable to heat and to oxidising and reducing agents. It is readily destroyed by alkali.

I came across the report of J. E. Jacques (*Lancet*) mentioned above when I had two cases (Nos. 1 and 2) of severe paralytic ileus on both of whom routine treatment of every kind had proved ineffective. Minim doses of oil Cajaputi, Tincture Carminative, Pitrissin, and Prostigmine had not prevented increase of distention. Continuous gastric suction, intravenous fluid and salt replacement together with subcutaneous fluid, large dosage of anti-gas gangrene serum, oxygen and lastly turpentine and ox-bile enemas had made the patient worse and did not produce any improvement at all. Dilute procaine infiltration of the flanks as recommended by Baily was done in case No. 1 with no result. Both the cases progressed

* Specially contributed to THE ANTISEPTIC.

towards death, with continuous dark-brown regurgitation through Ryles tubes and vomits; they looked extremely ill, the faces pinched, the skin shrivelled, and the radial pulse was uncountable. I read the above mentioned report of Jacques on 3 1-'52 at 3 p.m. and on the same day, Calcium pantothenate (50 mg.) was given intramuscularly to J. (Case 2); and 100 mg. was repeated at 11 p.m. At 5 a.m. on 4-1-'52, *i.e.*, 14 hours after the first injection and after 150 mg. of Calcium pantothenate, he passed flatus. More flatus was passed throughout the whole day and night of 4th January. At 7 a.m. on 5th January a large stool was passed and the patient felt absolutely comfortable. He appeared to have reabsorbed all the fluid from the cesspool of his own paralysed guts and was re-hydrated even when fluid administration by vein and subcutaneous route were stopped before the salt was injected.

At 8 a.m. on 4-1-'52 150 mg. of Calcium pantothenate was injected in a single dose to G H., (Case No. 1). Flatus was passed at 1-30 p.m. the same afternoon, a special nurse being appointed to note the time and report to me. Fluid regurgitation continued. Administration of calcium pantothenate was repeated six hourly in 50 mg. doses; more flatus was passed, regurgitation stopped and all other treatment was suspended except the antibiotic. Copious tarry stool was passed at 11 a.m. on 5th January 1952. The patient was immediately relieved and recovery was thereafter uneventful.

I could never reconcile myself to the use of morphine in ileus in my U.P. patients, though it is strongly advocated by Baily and also by Illingworth.

Baily condemns the use of peristaltic stimulants. My experience with prostigmine has also been unsatisfactory; it probably never did any good to any real case of paralytic ileus. Though I might say that as a prophylactic in early postoperative distentions it acted well, the question remained as to how many of those distentions would or would not have developed into real paralytic ileus.

The success obtained consistently in the dreadful post-operative complication (for any resident surgeon) of ileus by the simple and routine use of calcium pantothenate promises great hopes. After the use of Calcium pantothenate was started in this predominantly surgical hospital of 124 beds this dreadful condition did not recur although the number of abdominal operations have increased. I have now started the prophylactic use of the drug in all post-operative distentions, six hours after the operation. The result has been most gratifying, both to the patient and to the nursing staff.

A school of surgeons condemn the flogging of a tired horse, which is very logical, but the role of pantothenic acid as a component of the co-enzyme for acetylation, being intimately connected with the formation of acetylcholine appears to indicate that the stimulating line of treatment may still be correct, provided the

Results of Treatment with Pantothenic Acid in Paralytic Ileus by Calcium Pantothenate (T.C.F.)

Case No.	Operation	Sex and age	Time between operation and onset of ileus in hours.	Time between operation and injection of CPT.	Total C.P.T. in 50 mg. doses.	Time of passing first	
						Flatus	Stool
						after CPT.	
1	Appendicectomy ...	28 MM	24	72	350	5½	27
2	Prostatectomy ..	60 HM	7	76	250	14	40
3	Fracture lumbo-dorsal spine and T.P. of L. 1234 L.	55 HM	after the fracture 36 hrs	—	100	9	12
4	Transplantation ureter in V.V.F.	35 HF	24	50	150	7	—
5	Strangulated Ing. hernia (black bowel.)	36 MM	24	28	50	3	72
6	Strangulated Ing. hernia with operative tear intestine.	30 HM	72	96	150	24	24
7	Strangulated hernia ...	28 HM	34	80	200	3	72
8	Hysterectomy partial and anastomosis of bowels (injury).	25 MF	48	60	100	6	—
9	Gastro-jejunostomy ..	25 HM	24	36	100	4½	7 days
10	Fracture rib 11 and 12 left side.	35 HF	after fract. 12	6th day	50	2	—
11	Prostatectomy ..	60 MM	72	80	200	24	35
12	Cholecystectomy ...	45 MM	50	60	100	2	—
13	Anastomosis ileum (Int. strangulation).	30 HM	18	24	150	18	—
14	Exploratory laparotomy(cancer gall bladder).	45 HF	36	46	50	5	—
15	Rupture liver and injury parietes.	40 HM	72	78	50	3	—
16	Exploratory laparotomy and appendicectomy.	25 HM	24	36	100	8	—
17	Appendicectomy WW ..	22 HF	72	80	300	30	30
18	Nephrolithotomy ..	30 HM	18	24	50	2	—
19	Cholecystectomy ..	25 HF	9	9	100	3	—
			36·5	59·5	138·8	10	51

agent acting on the paralysed guts is not obnoxious. Prostigmine is not the natural stimulant but it prevents the destruction of acetylcholine at the nerve-endings, but that is not fulfilling the deficiency of acetylcholine itself. Again carbachole, which has a similar experimental effect as acetylcholine, is essentially different from the natural compound, because normal cholinesterase cannot destroy it.

The role of the "Filtrate factor" needs to be studied extensively. The average time of passage of flatus in the serious of Jaceues has been 4·25 hours, the minimum being 1½ hours and the maximum being 13 hours. Various doses were tried in the first four cases, 100 mg. being the first dose; 50 mg. was repeated six hourly. The results were not so quick. The average time for passing flatus has been 10 hours, passage of stool was in 51 hours, the minimum for flatus was 2 hours and maximum 30 hours. The average number of 50 mg. ampoules used before complete relief were 2·8. From the fifth case onwards, 50 mg. of Calcium pantothenate, six hourly, was injected as a routine and the results with more frequent doses or larger dosage had no additional advantage. Post-operative distentions which responded to a single injection of Calcium pantothenate are not included in the cases charted below. The results of treatment of paralytic ileus with Calcium pantothenate in 19 cases is given on page 338 in tabular form.

Conclusions.—Calcium pantothenate (T.C.F.) relieved desperate cases of paralytic ileus in a remarkably short time and restoration to normalcy was complete without additional therapeutic aids.

2. The restoration of blood pantothenic acid level reverses various chemical and physical disturbances without the necessity of attending to each of them separately. The fluid is thereby reabsorbed from the gut-lumen, salt balances correct themselves, and B. welchiflora appears to revert to its normal limits. Besides, symptoms of toxicity disappear.

3. The incidence of paralytic ileus appears to be high in this hospital compared to the Western U.P. In my experience, this may point to the fact that the origin of the disease may be a pre-existing pantothenic acid deficiency as the basic food consists of low grade rice and as the average citizen quite commonly shows other B. deficiencies as well.

I wish to thank Dr. T. T. Ratanchandani, M.B, B.S. (Bom.), P.M.S. (I), Civil Surgeon, and Superintendent of the District Hospital, Basti, for permitting me to use the drug in paralytic ileus and for his interest in the work and encouragement given to me and also for according permission to publish this paper.

CHEMOTHERAPY IN THE TREATMENT OF PULMONARY TUBERCULOSIS*

With a Further Report on Three Cases Treated with Tibizide

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THE progress and present condition of the 3 cases reported by me in the November 1952 issue of the ANTISEPTIC will first be detailed :—

Case 1.—J.K.P. was discharged on 27-9-'52 on request to continue P.P. as an outpatient. Though he was advised to stay near the hospital to avoid unnecessary exertion during travel, he went back to his village about 50 miles away and had to travel 30 miles on a bad road in a bus every time he came for P.P. refills once in a week. The result was, that he started running a temperature up to 101°F with cough and slight sputum. He also began to lose weight and the left lung showed, signs of active disease; the X-ray taken on 4-11-'52 showed, re-opening of the cavity on the right side with new infiltrations and three well-formed cavities on the left side—one just below the clavicle and the other two in the mid-zone. The patient was therefore, re-admitted on 19-11-'52 and was kept in complete bed rest.

A.P. (left) was tried on 28-11-'52 but no free air space was available due to extensive adhesions. P.P. was therefore, continued along with bed rest and Lysogland (LPB, Lugano, Switzerland) 5 cc. given by intramuscular injections every alternate day. This drug is reported to act by stimulating the reticulo-endothelial tissues of the body. A course of 25 injections of this drug was given, with satisfactory results. The temperature came down to normal at the end of two weeks and the patient began to put on weight; but the X-ray showed only slight improvement and the sputum remained positive for T.B. Isonex 50 mg. was given twice a day for eight weeks. Though the latest X-ray shows good improvement with closure of most of the cavities, the sputum still remains strongly positive by the ordinary method and the patient's weight is not steady, the general condition remaining the same. His present condition shows :—*X-ray chest dated 6-3-'53.* Right side:—Very good elevation of the diaphragm with good clearing but the apical cavity is still seen, though very much reduced in size. Left side :—Good elevation of the diaphragm with P.P. with good clearing. The cavities at the mid-zones are closed but the apical cavity is still visible.

Sputum :—8-3-'53 is positive for T.B. (Gaffky++) by ordinary tests.

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* Specially contributed to THE ANTISEPTIC.

Blood : E.S.R. 10 mm. Hæmoglobin 85%.

Weight on 20th March 1953 was 89 lbs ; on readmission it was 88 lbs. The patient is still coughing slightly. Temperature normal.

At present the patient is on the standard sanatorium treatment *plus* P.P. and streptomycin 1 g. every fourth day, and Tibizide with Calcium PAS and vitamin B 10 g. a day (about 150 mg. of tibizide).

REMARKS :—Unfortunately the patient is not co-operative and does not take proper diet, and so has not built up his natural body resistance.

Case 2.—B.M.P., the improvement with Tibizide impressed the patient so much that he insisted on continuing the drug which was however, refused as reports on long term treatment with this drug had not become available at the time. The patient therefore, began to complain of increase of cough etc., and actually felt that he was getting much worse and that he was denied the correct treatment. Physical, clinical and X-ray examinations however, did not show anything to justify his complaints. Therefore, I talked this matter over with his educated brother and with his help and consent gave the patient Celin tablets (which resembles Isonex) one three times a day without the patient knowing it. The result was miraculous and surprising! Within a few days he was well again and put on weight ; An all round improvement was also manifest. The patient took 200 tablets in all and was discharged much improved on 2-3-'53 to continue P.P. as an out-patient. His condition at the time of discharge was :—

X-ray taken on 27-2-53. Right side :—Good elevation of diaphragm with P.P. showing very good clearing in the diseased area. All the cavities closed excepting one near the hilum which is seen as a minute ring shadow. Left side :—Good elevation of the diaphragm with P.P. and marked clearing in the diseased area, with disappearance of all the cavities excepting one which is seen as a small ring shadow at the mid-zone.

Sputum :—24-2-'53 negative for T.B. by the ordinary method.

Blood :—E.S.R. 14 mm. Hæmoglobin 90%. Differential count shows increase of eosinophils to 21%.

Temperature : —Normal ; and weight on 27-2-'53 was 153 lbs.

General condition : Good. No cough and the patient was taking slight walking exercises, without any reaction before being discharged.

Case 3.—R. R. The patient left the hospital on 17-9-'52 against medical advice and did not take any treatment and eventually died at home after four months.

Discussion.—Of the three cases, only the second case showed proper improvement. He did not continue Tibizide or any other

form of chemotherapy. Again he is the only patient who continued hospital treatment for a long time. Therefore, only psychological treatment, with bed rest and collapse therapy had improved his condition. His was a very advanced case of bilateral disease on admission with multiple cavities and severe systemic reactions; so the improvement should be considered very remarkable indeed! The Tibizide helped in the turn of the tide but there was no need to continue the same; Case 1 clearly shows the fact that once the bacilli become resistant, they remain so for ever. The importance of body resistance is also shown in this case.

Six cases wers given Isonex tablets for eight weeks and my observations are given below:—

Reduction in temperature, increase of appetite and a sense of well-being were noted in four cases. One case reported that he did not feel up to the mark while taking the drug. One case started vomiting daily from the first day of taking the drug with a rise of temperature up to 102·4°F. and a morning drop to much below normal. These symptoms disappeared immediately after the withdrawal of the drug. Streptomycin 1 g. was given every fourth day and later when the temperature came down Tibizide with Calcium PAS and Vitamin B was given in addition. Again after some days (after taking 19 g. of streptomycin) the patient complained of giddiness. The streptomycin was stopped and 25 cc. of 25% glucose was given I.V. The patient is still continuing Tibizide with Calcium PAS and Vitamin B without any ill effects.

X-ray changes were not appreciable. In two cases there was temporary disappearance of cavities but after discontinuing the drug they could be seen again in the subsequent X-rays.

Most of the cases in this hospital are now being treated on combined therapy with streptomycin 1 gm. every fourth day and Tibizide with Calcium PAS and Vitamin B 10 to 12 gm. per day. So far, the patients appear to tolerate it well. Cases with cavities are given in addition, some form of collapse therapy. No complications have been noted so far.

The results of long term use of drugs as reported in literature show:—1. (*a*) Once streptomycin resistance develops it is more or less permanent; (*b*) with the continuance of chemotherapy in the face of persistently open cavities (in combination with streptomycin and PAS) even though the sputum became negative, sooner or later it reverts to positive; (*c*) prolonged therapy may cause closure of cavities especially when they are small and thin walled. If the cavities do not close during the first six months of prolonged chemotherapy, they are not likely to close thereafter by chemotherapy alone; and (*d*) when cavities are open the stopping of chemotherapy only increases the appearance of resistance bacilli.

2. In a report on the current status of Isoniazid therapy in the treatment of tuberculosis by a special committee, *The American Review of Tuberculosis* (Feb. 1953) states :—"In view of the toxicity of the isoniazid and the uncertainty about the control of isoniazid-resistant strains of tubercle bacilli, it is recommended that the patients should not be treated with isoniazid alone, but must be treated with a combination of it with either streptomycin or PAS or both.

3. The incidence of untoward symptoms following the sudden withdrawal of prolonged Isoniazid and Iproniazid therapy has been described by Selikoff, *et al* :—

(*a*) The symptoms included, headache, insomnia, vertigo, exaggerated dreaming and "nightmares", nervousness, depression, irritability, increased hyper-reflexes and in isolated individuals drowsiness, diarrhœa, weakness, and pruritus ; (*b*) The onset of the withdrawal symptoms was usually seen 24 to 48 hours after discontinuance of the therapy. These symptoms are reported to have lasted as long as six weeks and to disappear only gradually ; (*c*) They are found oftener in cases treated with iproniazid than with isoniazid ; (*d*) Iproniazid appears to be more toxic than isoniazid and is available at present only for experimental purposes.

Lastly, it will be very interesting to note that though the reports on every new form of chemotherapy vary from time to time and from person to person, the concensus of opinion on the value of well-tried and orthodox procedures of treatment of tuberculosis, such as rest, nourishment and fresh air, remains unchanged and I believe, will remain so for ever. Rest still claims a very high place in the treatment of pulmonary tuberculosis.

In his editorial, 'They stumble who run' in the *Diseases of the Chest* for Jan. 1953, Dr. Edward W. Hays has very well summed up the value of rest : "The use of rest as the basic principle in the treatment of pulmonary tuberculosis admits of no competition with the employment of mechanical, antibiotic or other means of therapy. If at the onset, other measures are indicated, they can be instituted at the beginning *along with rest*".

The value of rest no one can dispute. India is a poor country and unfortunately this dire disease is widely prevalent here. The majority of sufferers, cannot afford to spend their hard earned money on these drugs.

Therefore, it is our sacred duty to devise methods for treating the patients with the minimum financial strain to them. Rest does not cost anything, except to those who have to earn their daily bread by the sweat of their brows but even to them it will be cheaper in the long run to take enforced rest for sometime, than to work hard even when ill, and then have to spend heavily on new expensive drugs.

I wish therefore, humbly to impress on my professional brethren that (1) it is not wise to experiment on patients with every newly discovered drug without first knowing its value and efficacy as also its toxic reactions, as judged by the published reports of other workers.

(2) The time-honoured well-tried, orthodox and effective treatments, such as rest and collapse therapy etc. should not be discarded in favour of the new fangled and yet-to-be-finally-assessed methods.

(3) Cases with cavities *must* be treated with suitable collapse therapy as early as possible unless of course, the patient's condition militates against it.

(4) Drugs are useful but double-edged weapons and must be used with proper care and circumspection and in selected cases only after proper appraisal of the needs of each case.

(5) The patient's hard-earned money and resources must be husbanded and utilised for his nourishment and not on experimenting with new expensive drugs. Therefore, insistence on bed-rest and the timely administration of suitable collapse therapy with but one or more combinations of approved useful drugs when absolutely necessary will be the rational and economical treatment of pulmonary tuberculosis.

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Avascularity of Tuberculous Lesions—A Major Problem in Chemotherapy

Recent researches by independent observers have shown that the avascularity of lesions in tuberculous conditions is a definite barrier to the success of chemotherapy. Avascular lesions result from the extensive thrombosis and obliterative endarteritis of the blood vessels which enter chronic tubercular areas. Ischæmic necrosis, and fibrosis further increase the avascularity. The antibiotics used in treatment therefore, find it difficult to penetrate these pathological barriers and the quantities that do enter inspite of these barriers are of much smaller therapeutic concentrations and value. They are neither bacteriostatic nor bactericidal and so resistant tubercle bacilli emerge.

Cavernostomy is the procedure now being tried by many observers to drain cavities and introduce the antibiotic directly into the cavities. Pot. iodide, antihistaminic drugs, detergents and streptokinase are being used in conjunction with the antibiotics in order to liquefy or soften the lesions and render them suitable for penetration by the antibiotics. Tuberculin is also being used to restore vascularity to the tuberculous lesions. Jacobs and Kuhns who have been studying this problem state "Preliminary reports indicate that each of the attempts mentioned above has produced more effective results than when the antibiotic was used alone. The case is therefore, strong for a positive effort to be made for penetrating the avascularity barrier induced by the causes set forth *supra* if the full value and effect of treatment with antibiotic and chemotherapeutic agents are to be secured in chronic tuberculosis".—(*Dis. of Chest*, 23, November 1952).

EPIDIDYMO-ORCHITIS AND ITS MANAGEMENT*

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ORCHITIS is an inflammatory affection on the body of the testis and epididymitis is an inflammation of the epididymis and when both get involved the term epididymo-orchitis is applied.

Orchitis is due to:—(1) trauma; (2) primary affection in gouty and rheumatic individuals; (3) spontaneous onset without any cause; and (4) a sequel of mumps, typhoid or other eruptive fever as a result of metastasis.

Acute epididymitis.—(1) Usually results from gonorrhœa due to the extension of the inflammatory process from the urethra, particularly if the case is neglected. (2) Occasionally, follows the passage of instruments or dislodgement of a calculus. (3) Occurs secondarily to the affections of the prostate. (4) And may be due to a metastatic affection as in orchitis.

Sequelæ.—Atrophy of the testis usually results, if not properly treated. If it develops after mumps as a bilateral affection, it is very likely to lead to sterility.

The subacute or chronic type usually develops either as a consequence of the acute type or as a result primarily of blows and strains. Syphilitic orchitis usually develops during the tertiary stage of syphilis. Tuberculous epididymo-orchitis is always associated with tubercle elsewhere as in the genito-urinary tract, the kidney or bladder often being affected and always the seminal vesicle also of the same side.

TREATMENT:—*Acute stage*:—(1) The cause must first be sought for and removed. (2) Rest in bed in the horizontal position with the scrotum supported on a small pillow. (3) If seen very early, an icebag may be put over the part, later on. (4) Repeated hot dry fomentations. (5) Testicles to be supported by a suspensory bandage if the patient has to move about. (6) Vigorous chemotherapy with suitable antibiotics. (7) Application of glycerin-belladonna paint over the part (1 in 3). (8) General treatment for constipation, a preliminary dose of calomel followed by a light saline purge, (drastic purge should not be given). (9) For constitutional disturbances a plain diaphoretic mixture thrice a day, with 10 minims of vinum antimonialis added to ℥i. (10) Aspirin or soda salicylas with antipyrin in proper doses may also be given. (11) For relieving pain at night, a sleeping draught at bed time will be helpful. (13) The patient is given light diet consisting of fluids such as milk etc. especially in the acute stage. (12) In gouty patients vinum colchici with soda salicylas in proper doses and the occasional use of a saline purge are advocated. (14) When the pain and high tension fail to yield to local treatment, surgical intervention may become necessary as by

* Specially contributed to THE ANTISEPTIC.

(*a*) application of leeches on the scrotal skin; (*b*) opening a scrotal vein or by making a number of incisions on the œdematous skin; (*c*) puncturing the epididymis or testicle by a sharp glover's needle, or a fine tenotomy knife; and (*d*) if fluid accumulates in the tunica, it may be evacuated by a fine trocar and canula; also whenever 'acute hydrocele' results as a complication of the disease. (15) When the acute stage has passed strapping is usually advocated until the swelling completely subsides with the disappearance of the thickening and induration which usually takes some time. (16) A nourishing diet to maintain the general health should be given.

Chronic type.—If not of tubercular origin, it is nearly always syphilitic and this will require specific therapy both constitutional and local. If tubercular and is seen in the early stages, sanatorium treatment along with specific antibiotic treatment, should be prescribed. Surgical intervention may be necessary and should be undertaken with great care and circumspection.

Case Reports.—CASE 1.—J. R., Hindu, male, aged 35 years, a traffic shunting Jamadar came to the dispensary with the following complaints: (1) Constipation of 4 days' duration. (2) Pain on the right iliac fossa–duration 1 day. The patient was in moderate health with no previous illness.

On examination:—His right iliac fossa was painful and tender, the tenderness being more marked over the Macburny's point. Psoa's test slightly positive. The tongue was moist but coated.

Systemic examination:—Revealed *nil* abnormal.

He was given a low soap water enema which resulted in bringing out masses of foul smelling solid stools. He was put on a simple alkaline mixture and was asked to have light diet consisting of fluid only. On the following day when he was brought to the dispensary the temperature had risen to 101° F. and there was swelling with tenderness of the right testicle, the pain being of a characteristically sickening nature. Vomiting was also present.

On examination:—Right iliac fossa was not tender as on the previous day, but only slight pain on pressure was present. The spermatic cord was felt enlarged, infiltrated and tender, marked much on the external inguinal region and downwards on the right side. The scrotum was swollen, œdematous and red on the right side. The testicle on the right side was enlarged (size of a cricket ball) swollen, hard and tender. The gland was adherent to the scrotal skin. The epididymis could be felt as a crescentic swelling on all sides of the organ. The cord was felt infiltrated, enlarged and tender. The inguinal glands of the right side were swollen and painful. The left testis was normal.

Systematic examination:—Revealed *nil* abnormal.

Past history:—Patient denied exposure to venereal disease.

A diagnosis of *acute epididymo-orchitis* was made and the treatment was accordingly directed. Procaine penicillin 4 lacs units daily for 3 days. The temperature came down to normal by the 3rd day. Tenderness and swelling of the right testicle were also reduced. But the swelling and induration were there and took two full weeks to subside. During convalescence he was given besides other treatment, injection of milk (Lakolan, Cipla) 2 c c. I.M. every 4th day. 3 such injections in all were given to him.

CASE 2.—R.S.M., Muslim, aged 23 years, married, a loco cleaner was brought to the dispensary in a very ill condition with the following complaints :—

(1) Severe constipation for 3 days ; (2) unbearable pain in both the inguinal regions, for 2 days ; (3) feeling that both the testicles were pulled upwards—duration 2 days; (4) both the testicles painful and a little swollen and tender to the touch ; and (5) a rise of temperature up to 102°F, but no vomiting.

By the next day, the pain and swelling disappeared from the right testicle, whereas the left testicle became more swollen, painful and tender ; the pain in the inguinal region of the right side was also severe.

On examination the patient was in moderately good health but very restless with agonising pain.

The signs and symptoms on the left side of the organ were the same as those recorded in Case No. I. The temperature was 102°F., and pulse—proportionate to the temperature $\frac{V}{T}$ = good.

Systemic examination :—Revealed *nil* abnormal.

TREATMENT was similar to that given to Case No. I above.

All the acute symptoms subsided by the 4th day, but the swelling and tenderness of the organ continued for another 3 days and by the 13th day of the treatment, he was quite normal.

Follow-up :—Both the patients are enjoying good health and no complications have since developed.

Discussion.—As both the cases started with severe constipation, it seems likely that the infection may have been due to B. coli, but the fact that the condition yielded to penicillin in both patients militates against this view, for penicillin has no effect on coliform organisms. Therefore, the constitutional and local treatments alone might have done good while penicillin prevented the susceptible organisms from creating complications.

It is suggested that other antibiotics having specificity for coliform oragnisms may be tried in such conditions, with perhaps quicker results.

GASTRO-ENTERITIS IN CHILDREN*

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GASTRO-ENTERITIS in children is a condition that invites the attention of all medical practitioners especially in the mofussil, where it is a common ailment among children, owing to the neglect of sanitation ; this latter is also a cause of the high infantile mortality in India. Many children have lost their lives for want of prompt medical aid to combat gastro-enteritis which is quite as dangerous as any other disease of children. Many cases of this type seek treatment very late, usually in the state of collapse and acute dehydration. The best efforts end in vain.

Gastro-enteritis in children is a condition of severe irritation characterised by acute vomiting and diarrhœa with restlessness and dehydration followed by cramps and convulsive fits due to the toxins liberated. The primary cause in many children is error in feeding.

Weather also has some effect on children's gastric ailments. Extremes of heat or cold predispose children to gastro-intestinal affections owing to a lowering of the metabolism.

Some children are liable to have their livers upset interfering with the metabolic action of the whole gastro-intestinal system. Ascariasis in children may cause gastro-intestinal upsets. During teething children require more calcium in their food and any deficiency leads to defective calcium metabolism, which in turn may produce loose motions and vomiting. Want of hygiene is a common cause of green diarrhœa in bottle-fed children.

Profuse vomiting and acute diarrhœa are common in gastro-enteritis. The child appears to be highly dehydrated with a pinched-out and pale face, becomes very restless with sunken eyes. His tongue gets parched and the skin feels rough and dry to the touch.

The aim of treatment in gastro-enteritis is : (1) to eliminate any irritation due to worms or food in the stomach or intestine ; (2) to replace the lost fluid in the body tissue ; (3) to control vomiting ; (4) to get rid of toxins and to encourage perspiration ; and (5) to ensure rest and to prevent cramps due to dehydration and (6) lastly to stimulate the whole body, thereby preventing collapse.

In the management of such cases only plain water or glucose water sips should be allowed till the vomiting is controlled. Where glucose is not available, jaggery or sugar cane juice may be substituted. To overcome dehydration and toxicity, saline glucose 100 c.c. at a time should be given intraperitoneally or subcutaneously every four hours and ½ c.c. of coramine or cardiozal should be injected just to stimulate circulation.

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* Specially contributed to THE ANTISEPTIC

I have found the following prescriptions useful in many cases of gastro-enteritis :—

℞	Sodium Citras	.. gr. x
	Sodi Bicarb	... gr. iv
	Glycerin	.. ℥ xx
	Liq. Calcis	... ℥ xv
	Aqua Anithi	.. ℥ i

This mixture is to be given in divided doses according to the age of the child along with Carbo gunicil, enterovioform or thiomindon tablets. When vomiting persists the following powder helps.

℞	Enterovioform	.. tab. 1
	Cerium oxalate	... gr. 1½
	Pulv-creta-aromat	.. gr. iv
	Vita B, 3 mg. tab	... 1½
	Vita C, 6 mg. tab.	... 1½
	Glucose	.. q. s.

Ft. Pulvis Sig. ½ part two hourly till the vomiting stops.

The bowels are opened by a glycerine enema if highly constipated and when vomiting persists. When vomiting and diarrhœa are controlled the diet can be increased to include barley water with milk and orange juice. The following mixture is also helpful when there is vomiting and diarrhœa :—

℞	Sodium citras	.. gr. x
	Kaolin	... gr. xv
	Glycerin	... ℥ xx
	Liq. calcis	.. ℥xx
	Aqua anithi	... ℥ i ½ part
	Belamide	... tab. 1
	Berin	... tab. 1
	Celin	.. tab. 1½ part

When only diarrhœa persists a mixture of the following may be of use :—

℞	Sodium citras	... gr. x
	Kaolin	... gr. xv
	Sodium sulph	.. gr. xv
	Glycerin	... ℥ xx
	Aqua anithi	... ℥ i dose according to age.

When the child has got better a general tonic with vitamin and iron may be prescribed.

When the child has recovered from this acute ailment, worm powder should be tried, since many of the chlldren, harbour worms and get gastric upsets as a result.

Reference :

Vere Hodge E. H.—The Management and Medical Treatment of Children.

A STUDY OF CASES OF SPRUE IN INDIA*

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IT is very difficult to find a typical case of sprue in Indians though diarrhœic conditions allied to it are often seen. We get it in people coming from the hills or sea-side. Europeans have a great tendency to get it on the hills or by sea-side. Sprue itself is perhaps a deficiency disease but has definite clinical symptoms.

AETIOLOGY:—The ætiology of sprue is not clearly known but there are a few established facts which are:—

(1) Low absorption of fat: There is a lack of absorption, though splitting of fat does occur; perhaps absorption depends to a large extent upon emulsification by bile rather than splitting. Bacterial flora in the intestines is very important as, in the absence of vitamins, there is a lack of absorption of fats. Secretions of the cortex of adrenals and perhaps some other endocrine secretions also have a part to play in absorption.

(2) Another factor is the proper control of the plexuses of Auerbach and Meissner in the submucosa *e.g.*, if in deficiency disease, we give a barium meal, the intestines are seen as dilated food and lack of segments which show lack of local action of these plexuses.

(3) The original idea was that it was an infection but nothing has been proved in that line; however, certain families show greater susceptibility in which there has been a previous history of dysentery. About 15% have a previous history of hill diarrhœa. It may be possible that infection changes the flora in such a way that absorption is interfered with or there is atrophy of the submucosa and degeneration of the plexuses.

(4) The modern view is that it is a deficiency disorder, but again this does not hold good because it is not as common in poor people as in well-fed Europeans. It is nevertheless true that certain vitamins do cure cases of sprue which appears to be a secondary or conditional deficiency. There is a functional failure to absorb fats and carbohydrates.

In sprue, there is also a lack in the absorption of carbohydrates, calcium, (consequently calcium soaps are passed) hæmopoietic factors (resulting in severe anæmia which may be due to lack of chemical interaction of its constituents—intrinsic and extrinsic factors etc.). Vitamin B (resulting in glossitis etc.) and vitamin C; some may be the cause and others may be effects of sprue.

PATHOLOGY:—The person loses weight progressively. The heart is small and shows brown atrophy. Intestines show flattened mucosa. The whole the of gastro-intestinal tract is raw due to the

* Specially contributed to THE ANTISEPTIC.

deficiency. The tongue is first œdematous and inflamed and later atrophic, smooth and glazed with no fur over it. Bone marrow shows changes similar to those seen in megaloblastic anæmia. The suprarenals—especially the cortices show atrophy. Blood fats, cholesterol and Ca are low. There is lack of absorption of glucose when given orally. Anæmia is macrocytic, occasionally. Iron deficiency anæmia may also be present. There is hypochlorhydria or true achlorhydria.

Stools: Bulky, pale and frothy; characteristic is the one passed first in the morning. Give 100 gms. fat, the previous night and the stools will be characteristic; chemically, the stools will contain 35–70% of fat whereas the normal amount is hardly 20%.

SYMPTOMS:—The onset is insidious with dyspeptic symptoms first; the patient losing weight, with distention of abdomen, flatulence and occasionally a loose motion. Sprue is mostly preceded by other forms of dysenteries or hill diarrhœa. Then the regular symptoms appear *viz.*, lassitude, diarrhœa, soreness of mouth which may go on to dysphagia, flatulence and wind production early in the morning. There is pultaceous (*sic*) wasting of the person, there being no submucous fat. There is pigmentation over the cheeks and nose. The patient develops a neurotic temperament; cramps and twitchings may often be seen due to low Ca. Appetite is poor. The patient is markedly anæmic. Mean corpuscular volume is above 100 in the majority of cases, the colour index is over 1—showing a macrocytic type of anæmia. The lower abdomen is distended; the wall of the abdomen is very thin and so we can see segmentation of the intestines *i.e.*, visible peristalsis. Liver dullness may be obliterated due to too much of gas; certain peticheal hæmorrhages form under the skin due to deficiency. There may be slight œdema of the feet.

X-ray investigations show marked segmentation and rapid emptying of both small and large intestines.

DIAGNOSIS:—It is not a common disease and so, many are diagnosed wrongly as cases of sprue. The diagnosis of sprue depends upon the analysis of the fat contents of stools in the form of split fats. Soreness of the tongue occurs in macrocytic anæmia, pernicious anæmia and pellagra but in such cases characteristic stools (showing typical fat analysis) are absent; moreover, in these cases, wasting never occurs. Subacute combined degeneration of the cord and peripheral neuritis which are common in pernicious anæmia are never seen, in cases of sprue.

TREATMENT:—Treatment consists in giving a low fat and carbohydrate diet and supplyiug the vitamins which are lacking. The patient is put to rest in bed and his diet and medicine are properly supervised.

Diet:—Two types:—(1) *Skimmed milk diet.* (2) *Meat diet*:—Lean meat free from fats. A pure milk diet may be better. Milk—Sprulac may be given; for the first few weeks, sips of milk are given

with fruit juice and a little sugar. Total amount of milk given in 24 hours is 60 oz.

	Proteins	Fats	Carbohydrates
Milk	1	0·1	1
If sugar added	1	0·1	2

Gradually after 10 days or so add other things and also increase quantity of milk; you may now give one or two toasts or rusks, then add one egg and later on two eggs; start adding soup to the diet and then tea without much sugar; meat, vegetables then only as curries and fats are given last of all. Fruits like apple, banana and papaya are given. Liver soups have a great reputation in the cure of sprue, they cure anæmia and supply vitamin B complex.

MEDICINAL TREATMENT:—Deficiencies rectified, folic acid is very much advocated; fat absorption is not improved thereby though anæmia and diarrhœa respond. Nicotinic acid controls diarrhœa and glossitis. A rare case may need blood transfusion. The patient is kept in bed as mental and physical rests are very important. For hæmorrhages and twitchings, give vitamin C and D and Ca. Violent purgatives should be avoided.

At the start of the treatment, put the patient on sulphaguanidine and enterovioform to sterilize the gut free of secondary infections and also relieve the patient of diarrhœa and flatulence. Damp places or hills should be avoided.

PROGNOSIS: good but relapses do occur because of failure to observe and maintain restricted diet and regulated habits.

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2. Wakely—Medicine, 1950.
3. Savil—Medicine, 1949.

Streptomycin for Acute Gastro-Enteritis of Infancy

Streptomycin has been given orally in cases of acute gastro-enteritis by Drs. Flensborg and Boesen at a Children's Hospital in Fuglebakken, Denmark. Dihydrostreptomycin was given six times a day for seven days; the individual dose was 50 mg. for infants under 3,000 gm. in weight, 75 mg. for those over this figure and under 6,000 gm., and 100 mg. for larger children. In the treated group as in an earlier group not given streptomycin, a starvation regimen was maintained for a few days and then the infants were given parenteral injections of penicillin. In both groups certain additional therapy was also employed. The streptomycin-treated group showed superior results in many ways over the control group although at the beginning, the condition of the patients was very similar in the two groups. There were five deaths among the controls, whereas there were none in the streptomycin-treated group. Excluding patients who died, were premature or had stenosis of the pylorus, the average duration of hospital treatment was 78 days for the controls. It was 35 days for the streptomycin-treated group. In any event, the authors note, other remedies and precautions must not be overlooked. In any case parenteral injection of penicillin is in order and oral streptomycin may have to be augmented by parenteral injection.—(*J.A.M.A.*, 145, 1086, 1952).

Report of a Case of Tumour in the Abdomen and Chest of a Child

Capt. R. S. Kesavaraj and Capt. R. Ramachandran

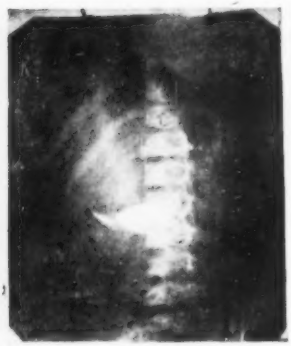

FIG. 1

FIG. 2

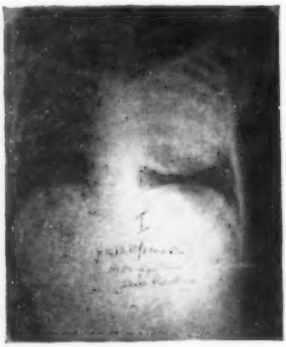

FIG. 3

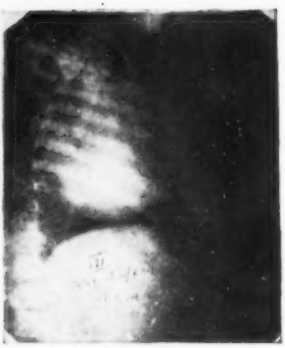

FIG. 4

Fig. 1.—Right oblique of abdomen d/ 18-4-'52 taken after administering a small amount of barium meal.

Fig. 2.—Left lateral of the same of even date.

Fig. 3.—P. A. of the chest.

Fig. 4.—Left lateral of the same dated 18-4-'52.

[*Vide page 353.*

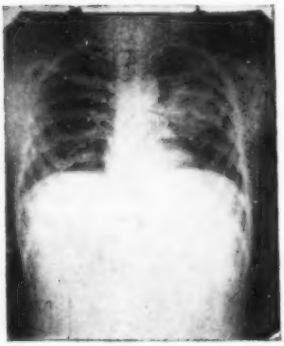

FIG. 5

Fig. 5.—P. A. of chest.

Fig. 6.—Left lateral of the same dated 18-7-'52.

Fig. 7 is the photograph of the patient taken on 28-7-'52.

[*Vide page 354.*

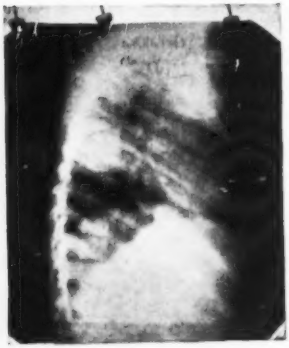

FIG. 6

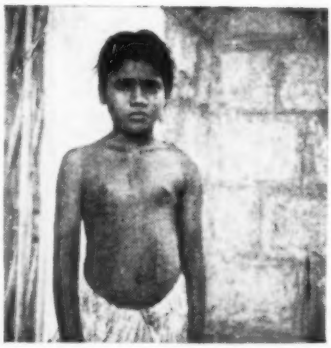

FIG. 7

REPORT OF A CASE OF TUMOUR IN THE ABDOMEN AND CHEST OF A CHILD

Capt. R. S. KESAVARAJ,
District Medical Officer, Guntur,
AND
Capt. R. RAMACHANDRAN,
Radiologist, H.Q. Hospital, Guntur.

I. A girl, M.M., aged 9 years, was admitted into the medical wards on 17th April, 1952.

Complaint:—A lump in the epigastric region of one year's duration; previous and family histories revealed nothing relevant.

Present history:—About a year ago, the patient suffered from irregular fever for one month which was treated in her village. Five days after the fever had subsided, a small lump was noticed in the epigastric region, which gradually increased in size and was of the size of an orange within a few months. With the increase in the size of the lump, the patient developed dyspnœa.

Condition on admission:—A well nourished girl not anæmic, of the agricultural labouring class. Weight on admission was 44 lbs.

Epigastrium showed a round lump about 4" diameter not inflammatory, not adherent to the parietes and moving with respiration. Fluid thrill was not elicited. *Chest*: Dull on percussion, V.F. and V.R. diminished. *Breath sounds*: Normal. *Heart*: Pushed to the right. Sounds normal. *Blood*: Relative eosinophilia of 8%. Hb. 55%. *Other systems*: N.A.D.

X-ray:—The patient was referred for X-ray of abdomen as tumour. An opacity on the left side of the chest was seen, on screening. (*Fig. 1 & 2*).

The tumour was seen to exert pressure on the stomach from above downwards, located anteriorly and of an homogeneous density. Appearance was in favour of a tumour of liver possibly a hydatid. (*Fig. 3 & 4*).

Round homogeneous opacity, occupying most of the left hemithorax and obscuring the cardiac shadow was seen. The surrounding parenchyma was not affected. Possibilities:—(1) hydatid or (2) encysted effusion.

II. On the seventh day after admission, the patient developed a remittent type of fever with 103°F (evening maximum) and 100°F (in the morning) and with broncho-pneumonic symptoms. She was put on penicillin and sulpha group of drugs. She touched and kept normal from 29-4-1952. Operative treatment was delayed, on account of this febrile attack.

III. On 9–5–1952, a laparatomy was done under general anæsthesia. Incision was left paramedian. On exposure, a cyst on the under surface of the left-lobe of the liver extending to the right and adherent to the stomach and colon was seen. It was pearly white in colour and easily separated from the surrounding tissue. During excision, the cyst got punctured and clear serous fluid escaped. About an inch of the cyst wall, at the porta hepatis, could not be excised as there was bleeding. So, it was left behind and the abdomen was closed.

IV. The cyst wall was sent to the pathologist, and his report was "fibrous wall of a cyst. Deeper sections studied show a laminated fibrous wall with lining germinal layer—suggestive of hydatid cyst—No hooklets are seen".

V. Convalescence was uneventful and sutures were removed on the 13th day. The wound healed by first intention.

VI. By 5–7–'52, the patient weighed 56 lbs., and her general condition was so good that surgical interference in regard to the chest condition was felt justified and she was sent for X-ray examination on 18–7–1952 to localise the tumour in the chest. (*Fig. 5 & 6*).

REPORT:—The opacity on the left was seen to have reduced markedly both in extent and density and the cardiac shadow was not obscured. The cyst was located in the posterior mediastinum.

VII. In view of the marked resorption of the contents of the cyst, reducing it to less than a sixth of its original size freedom from any symptoms and marked improvement and general condition, surgical interference was considered not indicated. The patient is still in the hospital at the time of writing (8–10–'52) and maintaining the improvement. *Figure 7* is the photograph of the patient taken on 28–7–'52.

VIII. DIFFERENTIAL DIAGNOSIS:—The following are mentioned to be excluded: (*a*) Cyst associated with the polycystic disease of the kidneys. In this case kidneys were normal. (*b*) Cyst associated with tumours as in adenoma and carcinoma. No such condition was seen on operation. (*c*) Dermoid: These are congenital in origin and very rare. They are classified according to the type of tissue contained: (i) those which contain ectodermal derivatives as epidermoids; (ii) those with also meso-dermal as dermoids; and (iii) those containing all the three germinal layers as teratomata and the whole group is conveniently included under the term dermoid. Most are cystic and some are solid. The contents of a dermoid cyst may be expectorated after rupture into a bronchus with complete cure in rare instances"; such an incident did not occur in this case.

IX. Hydatid among the parasitic cysts, and retention cyst among the non-parasitic, are the most suggestive conditions in this case.

Comments.—(1) Hydatid can be unilocular containing no daughter cysts and can remain latent for long periods. A co-existing pulmonary cyst is not uncommon. As the route by which the parasites reach the lung is by the blood stream *via* the liver, it is not difficult to conceive that the cyst in the lung can be secondary to that in the liver. Echinococcus cysts of the lungs have been noted to disappear spontaneously, and in this instance, a spontaneous regression occurred after the liver cyst had been excised and as such the conception that the liver lesion acted as the primary is supported. The location of the hydatid cyst in the mediastinum is not unusual, and in this location the differential diagnosis is between hydatid, mediastinal tumours, dermoid, interlobar effusion etc., when considered from purely radiological appearances and when the cyst is not ruptured as in this case.

(2) As against hydatid, the patient showed only 8% of eosinophilia and did not have allergic symptoms even after the contents of the cyst were accidentally spilled during the operation. The cystic fluid was clear and the patient recovered without any untoward incident.

(3) Complement fixation and Casoni's intra-dermal tests could not be performed and so one has to depend mainly on the clinical picture which is not in complete support of hydatid of the liver and the chest. The pathologist's report is "suggestive of hydatid cyst".

(4) The second possibility is a retention cyst. "Cysts of this type are generally regarded as due to retention within a small bile-duct the result of local obstruction by fibrosis; in most cases the cyst is small but occasionally reaches a large size. The cyst does not communicate with the biliary system and therefore does not contain bile".

In support of the above are: (1) the absence of hooklets and daughter cysts, (2) the absence of anaphylaxis after the cyst-contents were accidentally spilled during the operation; while against it are:—(1) the history of the case; (2) the presence of a second cyst in the mediastinum which showed spontaneous regression; and (3) the biopsy finding.

Summary.—A case with a cyst of the liver and of the posterior mediastinum is reported. The cyst of the liver was unilocular and showed no daughters or hooklets. It was almost completely excised. The mediastinal lesion showed spontaneous regression. The patient made excellent recovery.

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LIFE-SAVING SURGERY—TRACHEOTOMY BY THE ROADSIDE AT NIGHT!

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TOWARDS the end of June 1951, I was one of a shikar party of four to some tanks near Narasapur, in Nalgonda Taluka, in the State of Hyderabad. It was growing dark and we were hurrying up to reach a *dak* bungalow a few miles further on, before it should start raining, when we were stopped by a barricade of a party of villagers strung out across the road. Suspecting a communist hold-up we slowed down guardedly, but soon discovered that the men were peaceably intentioned and were flagging for help.

They told us that a boy had swallowed a betel-nut, which had got stuck in his throat and suffocated him. They had brought him to the roadside on a *charpoy*, in the hope of getting help from cars passing along the road for getting him off to a hospital. The car was manouvered to throw its lights on the *charpoy*; they showed the body of a young man of about twenty lying with his head on a woman's lap. He appeared to be dead.

A quick examination revealed intense vascular engorgement, swelling and turgidity of the face and neck. The lips were swollen and blue. There was neither pulse nor breathing. By direct auscultation a very feeble and occasional heart beat could be made out. Frothy blood-stained saliva had dried at the corners of the mouth and there was a sanious discharge from the nostrils. Corneal reflex was absent. The jaws were locked so that it was not possible to force the mouth open for examination. The history was quite clearly one of impaction in the larynx.

After a hurried consultation, the desperate urgency of the case for operation was explained to the father and uncle. They were told that life was all but extinct, and would be completely so in a few minutes, unless the nut was cut down on and removed from the windpipe then and there. Luckily there were two doctors among us who were prepared to do the needful and there wasn't a minute to lose. The relatives of the patient had evidently come to the same conclusion themselves, for they implored us to do whatever we thought necessary, calling down blessings for the success of our intentions.

It was not an inviting prospect. Darkness—a lonely road—an ugly *nulla* on one side—overhanging *babool* trees, a scene reminiscent of Amir Ali of Thuggee fame—a restive ignorant crowd and a 99% chance of failure A gust of breeze shook down a shower of small yellow *babool* flowers and a gentle drizzle came on.

The headlights of the car were properly refocussed on the *charpoy* and my wife, who is also a qualified surgeon, took over the head from the the patient's mother who with the others

was sent to sit at some distance away out of sight. This had been agreed to as one of the main conditions of our helping in the matter.

The cushion from the back seat of our car was placed under the patient's shoulders and the head steadied with the neck on the stretch. The only instrument available was a hunting knife with a nine inch blade. It had a sharp and useful point however, such as hunting knives have for skinning game. After washing the knife and the neck with petrol-soaked handkerchiefs, the point of the knife guarded between finger and thumb to half an inch, was pressed into the midline of the front of the neck. Some one flashed a torch. Dark blood welled up and flowed out around the bloated neck. A *roumal* and a face towel were all the sponges we had. With pressure on the edges of the wound and steady deliberate snicks, keeping the cutting edge of the knife directed upwards, and careful exploration with the finger, the trachea was entered into and two or three rings severed. With a few artificial respirations the blood started to flow freely out of the wound and air could be heard being sucked in through it. A motor lorry, carrying toddy to Hyderabad now drew up and furnished us extra lighting with its headlights.

After a short interval there was a fit of coughing and choking and the patient commenced gasping for air. A first-aid field dressing was discovered in one of our haversacks, very battered and stained, but on opening it two pads of cyanide gauze and two khaki bandages in a fairly usable condition were found. There was also a capsule of iodine but it was empty.

Suddenly an altogether unexpectd and most gratuitous thing occurred. With a paroxysm of coughing the nut, probably shifted by the position of the head or manipulations of the neck during the operation, was expelled into the mouth and forced out. The bleeding decreased with graded manual pressure and the patient was sent to the Osmania General Hospital at Hyderabad in the toddy lorry.

We reached the *dak* bungalow a little after ten. A Busman's holiday!

Skin Patterns of Allergy to Penicillin

Penicillin has been incorporated into practically every product which the individual may conceivably breathe, chew, drop or spray; tooth-powder, nose sprays, troches, chewing gums, eye drops and ear solutions containing penicillin are recommended by neighbours to each other, usually without the sanction of the physician. Since oral sensitization is perhaps the most easily acquired of the penicillin sensitivitis, the indiscriminate use of penicillin products taken orally has resulted in a marked increase in contact type reactions observed in the oral cavity, as well as systemic effects of an allergic nature. Individuals who have become sensitized in the treatment of trivial disorders may be deprived of the remarkable effects and benefits to be derived from penicillin at a time when it is most essential that such an antibiotic be administered. So it is suggested that it is administered *only* in those cases, in which the welfare of the patient demands or necessitates its use, in preference to other equally effective medications.–(*South Western Med*, Nov. '52, p. 401).

POST-MEASLES ENTERITIS

N. K. CHATE, L.C.P S. (BOM.),
Murgod.

MEASLES one of the most infective of fevers is caused by a filterable virus. It occurs both in endemic and epidemic forms. It affects children mostly, especially those under five years. Death is usually due to complications and occurs mostly in children under 3 years.

Prevention is not so easy in this disease, since it is most infective during the prodromal stage, when it is usually missed and the parents go to the doctor late at the height of the fever a day or two before the eruptions, start. The condition is easily recognised only after the eruptions and so during the infective period the patient is not isolated. Active immunity is attained but to a small extent. In urban areas more people go to the doctor at the beginning of the infection for treatment. Hence post-measles complications are not so frequently seen in towns as in villages.

In rural areas measles is ascribed to the wrath of the goddess ; and people try to appease it, with mantrams and offerings of different kinds. The patient is not treated properly and indigestible food like parched rice, and grams, cold unboiled milk are given to aid the quick appearance of the eruptions. After appearance of the eruptions "sweet" oil is applied to the whole body and a hot water bath is given though there is fever. Naturally respiratory and gastrointestinal complications appear, and in my experience the gastrointestinal complications (enteritis) are more difficult to tackle than the respiratory ones. In gastrointestinal complications the antibiotics are of little or no use ; penicillin, aureomycin, sulphaguanidine, sulphadiazine have all been used by me separately. But these will give good results, only when the enteritis occurs in cases of measles which have been under the doctor's care from the start.

Nearly all cases of enteritis following measles occur in children below the age of 10 years, most of them being 3 to 5 years. The enteritis starts 7 to 10 days after the eruptions, and children then live for only for about 3–4 days in a highly dehydrated and toxic condition. The vomiting is not serious at first, but the frequency of motions is high numbering about 20 to 25 in a day. There is tenesmus and in some cases, even prolapse of the rectum. There is high temperature with a furred yellow tongue. At first the motions are foul and semisolid becoming watery and tinged with blood but no mucus, from the second day of the onset of enteritis. The motions gradually become less and less in quantity till only a drop or two come out. The child is in agony with pain due to the tenesmus till life becomes extract. In some cases distention of the abdomen is noticed, and the child sweats a little due to exhaustion. But throughout the course, there is severe toxæmia.

I have treated 15 cases, in all; some cases were treated with a single antibiotic and kaolin mixture. In some cases a combination of penicillin and sulphaguanidine was tried. In some others, aureomycin and sulphaguanidine were tried. But all cases ended fatally. I give below a typical case as an example:—It was treated with antibiotics and sulpha drugs and dehydration was combated by glucose-saline but without success.

CASE.—F., male aged 4 years, was admitted on 21-11-'52 with a history of 20 to 25 motions, and high fever 103°F. The patient was a well-fed robust child.

History:—On 8-11-'52 he was attacked with measles, but was not given any treatment. He was given solid food and a hot water bath with an application of sweet oil after the eruption had started.

Examination:—The child was well-fed, not much toxic on the first day. Temperature: 103°F. Pulse: very rapid, over 140. Respiration: rapid but no foreign sounds. Tongue: furred. Spleen and liver normal. Abdomen was slightly tender and slightly distended. Urine: slightly coloured but no albumin. Motions: watery tinged with blood and foul smelling. There was much tenesmus and he was straining much while passing stools.

TREATMENT:—℞		
	Kaolin	ʒiii
	Cal lactate	g. x x
	T. Camphor Co.	♏ x
	Aqua ad	℥ iv: 1/12 part every 2 hours.

Injection of 3 lacs of penicillin in the morning and evening.

Orally:—Aureomycin (mg. 45) with pulv. creta. aromaticus, gr. v; 4 hourly.

On 22-11-'52:—Temperature 99·5°F. but other conditions remained the same. There was dehydration; penicillin was repeated and aureomycin with sulphaguanidine was given. For dehydration glucose saline 75 c.c. was given subcutaneously.

On 23-11-'52:—Temperature 98·5°F. The number of motions was lessened to 10 or 12 very small in quantity but with tenesmus. Occasionally he used to vomit; penicillin and saline were withheld; other treatment continued. Barley water and fruit juice were given.

24-11-'52:—Temperature rose to 100°F. The condition of motions was the same as on 23rd. Vomiting persisted; urination became scantier and the patient was more dehydrated. Instead of Kaolin mixture he was given Sodi bicarb gr. xv, Sodi citrate g. x, Tinc. Bellad. ♏ x every six hours. Dextrose saline 100 c.c. was given subcutaneously. Aureomycin was continued. Vitamin B. complex and Vitamin C were given. Penicillin was not given since the parents requested me not to trouble the child with more injections. Hence I gave sulphanilamide 2 tablets in divided doses.

25-11-'52 :—Condition remained the same. The patient had become more toxic, with slight perspiration in the forehead. Again glucose-saline 100 c.c. was given. Penicillin 5 lacs was given in the morning. The routine treatment was also continued. At about 6 p.m., the temperature shot up to 103°F. Facial twitchings became marked ; the patient did not pass urine till 10 p.m. and died later.

Conclusion.—There was no respiratory complication from the very beginning and the treatment with antibiotics and other medicaments for the post-measles enteritis was a failure. Clinically there was no evidence of abdominal malaria. I request my professional brethren to elucidate from their own experience.

Non-Surgical repair of Cystocele and Rectocele (An Original Technique)

Having observed satisfactory results of the treatment of internal hæmorrhoids, with quinine and urea hydrochlor, Webster decided to employ the same principle in the correction and repair of cystocele and rectocele in women who cannot or will not submit to surgical treatment.

2 c.c. of a 5 per cent solution of quinine and urea hydrochloride with 2 per cent procaine are injected into the submucous layer of the vaginal wall. The usual method is to inject 1 c.c. into the right and one c.c. into the left side of the anterior wall ; the second treatment should be into each lateral wall ; the third into the posterior wall ; then proceed at different levels. If the patient does not experience more than a momentary dizziness the dose can be and is usually increased to 2 c.c. for each injection at the next visit ; a total of 4 c.c. per treatment. These are given twice weekly. An average case would require a total of about 50 c.c.

Topical anæsthesia *e.g.* 2% pantocaine is swabbed at the site of the injection. A 3 inch No. 22 gauge Goldbacher needle is very satisfactory. If the tissue turns white at the point of insertion, the needle must be immediately withdrawn to avoid sloughing ; this is particularly likely to happen on the anterior wall which is usually cracked and leather-like. Though poorly nourished any sloughing in this tissue will readily and quickly respond to a tampon covered with a soothing ointment. A tampon lubricated with a soothing astringent ointment is packed high in the vaginal vault and one or two smaller ones in the lateral fornices and these tampons are retained for 2 or 3 days if possible and are followed after removal by a soothing douche. Distinct improvement in the cystocele and rectocele conditions appears after 3 or 4 treatments and time must be allowed for the full effect of shrinkage. Dr. Webster concludes with five illustrative case reports and her conclusion is "Quinine and Urea hydrochloride injected into the submucous layer of the vaginal wall produces contraction of the relaxed walls and thereby support the prolapsed organs involved in cystocele and rectocele."—(Webster, C. S., *Arizon Med.*, 9, pp. 27–29, 1952).

AN UNUSUAL CASE OF JAUNDICE IN THE NEW-BORN TREATED WITH CHLOROMYCETIN

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A FULL term primipara was admitted into my hospital, and was delivered of a normal female child. The mother had an attack of enteric fever in the early months of her pregnancy which was successfully treated along the usual modern lines using chloromycetin kapseals. She kept normal health thereafter, during the rest of the time and had no trouble at the time of delivery.

On the 4th day after birth, the child started getting fever up to 100°–102°F in the afternoons, and touching normal in the mornings. The child was constipated and passed scanty urine and stools only once in 24 hours. The urine was highly coloured and the eyes were deeply yellow.

PROVISIONAL DIAGNOSIS :—Icterus neonatorum with urinary complications.

TREATMENT:—Hydrargyri *cum* creta gr. ¼ every 3 hours: Urotropine powders gr. ii t.d.s. Euquinine gr. ii- t.d.s. Uroxyl (C.D.C.) granules in water to increase the flow of urine. Inj. crystalline penicillin 1 lac b.d.

Inspite of the above treatment, there was practically no change in the child's condition ; the constipation and scanty urine (once a day only), the fever, the jaundice (eyes and urine coloured deep yellow) all persisted without any change.

(*Contd. on next page*).

Hydro-cortisone in Rheumatoid Arthritis

The painful deformed joints of rheumatoid arthritis are usually resistant to treatment and are the main cause of the crippling nature of the disease. If by any means the pain and swelling could be reduced by intra-articular injections it would go a long way in reducing the agony of the condition. The barrier of psychological depression would also be raised. The authors have tried intra-articular injections of hydro-cortisone in a series of cases. In all the cases a solution containing 25 mg. of hydro-cortisone per c.c. was used. The joint cavity was approached though the medial subpatellar route in the case of the knee joint, while the ankle joint bursa was pierced though an approach anterior to either the medial malleolus or the lateral malleolus. On an average 25 mg. of hydrocortisone was injected into the knee joint and 15 mg. into the ankle joint. In either case the solution was injected only after the synovial fluid had been aspirated. The injections were repeated as soon as joint pain returned. Sixty eight injections were made into 23 joints. In no case was relief permanent. The subjective relief from pain and crippling was remarkable lasting for variable periods of 7 to 30 days. Objective improvement as indicated by decrease in joint fluid and swelling was also noteworthy.

This method of treatment of joint disability in rheumatoid arthritis is considered by the authors Col. Berry and Capt. Benson, to be deserving of further trials.—(*U.S. Armed Forces Medical Journal*, Jan. 1953).

Then on the 13th day, along with the above line of treatment, the following were given—alkaline diuretic mixture ; Chloromycetin 1 small teaspoon (about 125 mg.) was given 4 hourly and to our surprise the temperature subsided after 4 days of chloromycetin medication and the other complaints (constipation and scanty urine) were also relieved ; the child passed urine 4 to 5 times a day and had 2 to 3 motions also, The colour of the urine and conjunctivæ also changed to normal gradually and the temperature remained at 97·8°F the whole day. The child has greatly improved and is doing well.

Conclusion.—Chloromycetin therapy played a very important role in the treatment of the serious complaints of the newborn especially jaundice, urinary complications and consequent fever. The points of interest in this case, are :—(1) the urine was affected which is very rare in cases of jaundice of the new born and (2) chloromycetin alone proved effective.

I have treated several cases of icterus neonatorum before with grey powder, urotropine, glucose etc. and obtained very good results. But in this case they did not help ; only chloromycetin was useful.

Terramycin in the Treatment of Pneumonia in Children

Fisher and Whitfield carried out a clinical trial of pneumonia in 50 children using terramycin and a 'standard treatment' of penicillin and sulphonamide for controlled comparison.

The group treated with terramycin received orally 44 mg. per kg. body weight per day in four divided doses. The standard treatment group received 0·5 gm. of sulphadimidine orally at four hourly intervals and 300,000 units procaine penicillin G (distaquine G) intramuscularly at 12 hourly intervals, if over the age of 3 years. If less than 3 years 0·5 gm. of sulphadimidine was given immediately and 0·25 gm. four hourly with 150,000 units of procaine penicillin G at 12 hourly intervals ; treatment continued until the clinical condition was satisfactory and the temperature had been normal for 48 hours.

The effectiveness of treatment was assessed on the duration of fever the average stay in hospital, the development of complications and the mortality. There was no significant difference in the duration of pyrexia or length of stay in hospital for the whole group or for the severely ill cases. There is *no evidence* from the results of the two treatment groups the *terramycin is any more effective than the standard treatment.* In fact there was a greater incidence of delayed pulmonary resolution with terramycin, although the average age in this group was higher and likely to favour a better response. The drug did, however, avoid the unpleasantness of giving injections to children and the possibility of toxic renal or hæmatological effects of the sulphonamides though none were observed in this series.

From the results obtained in this trial, especially on account of the expense and limited availablity of terramycin it is suggested that penicillin *cum* sulphonamide therapy remains the more satisfactory treatment for bacterial pneumonia in childhood.—(*Br. Med. Jour.*, 2: 864, Oct. 18-1952 and *Internat. Med. Dig.*, Jan. 1953).

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MALARIA CONTROL IN INDIA

A COMPREHENSIVE All-India Scheme of prevention and control of malaria was recommended by the Central Health Council during its session at Hyderabad early this year. COL. JASWANT SINGH, Director of the Malaria Institute of India went round the different States of India which were participating in the National Malaria Control programme and held consultations with the Public Health departments with a view to making the campaign a success. "The campaign will provide protection" said COL. JASWANT SINGH to press interviewers, "against malaria for some 75 million people in this country. The Central Malaria Institute will provide the necessary technical assistance, the States concerned being responsible for financing the programme under the Indo-American Aid." He said that the progamme will start functioning from 1st April 1953 and that D.D.T will be the principal insecticide used in the campaign.

This national campaign against malaria has since been inaugurated as a consequence of an agreement between India and the United States and the advice of experts belonging to the WHO, UNICEF and the Rockefeller foundation has been available to the Government of India at the Centre and in the States. Sri Dr. T. LAKSHMINARAYANA, a former Director of Public Health of the Madras State, who was appointed in 1951 as Adviser on Health programmes to the Planning Commission in one of his memoranda stated that malaria is perhaps the most important public health problem at the present day in India, as it takes a direct toll of over a million lives every year and is responsible for another million lives who succumb to its after-effects, and the consequent economic loss to the country runs into several crores of rupees every year. "An expert of the Rockefeller foundation estimates the loss at about Rs. 3 per head per annum. The striking

success of the control projects within two years of their introduction in the Terai (U.P.) Orissa, the Malnad tracts of Mysore and the hilly areas of Malabar is described in the final reports received early this year from the Medical scientists of the WHO.

Bombay State is stated to have framed an elaborate programme of precautionary preventive measures to cover several districts in the State. The River Valley projects (Damodar Valley and Thungabadhra, for instance) require elaborate precautions to make them safe and free from malaria. All multipurpose projects indeed include preliminary epidemiological and malarial surveys before launching on the main projects. Every malarial control campaign has two phases of activity :—the preventive and curative sides. As a result of wide and intensive research in several countries of the world, increasingly potent drugs are being discovered for the successful treatment of malaria. If the Korean war has been productive of any little good to the world, it is in this direction of the discovery and application in the field of yet new drugs for the cure of malaria. *Daraprim* is among the latest for which high potency is claimed.

On the preventive side, the importance of malaria control has come to be increasingly recognized and the Five Year Plan relating to Health has accorded a very high priority to this problem. The medical and Public Health plans of the Central and States Governments envisage an outlay of nearly a hundred crores of rupees. The plant for the manufacture of D.D.T. that is proposed to be set up in India to meet the entire needs of the country, is expected to start production in 1954. The new programme envisaged in this five year plan will employ about 75 units for malaria control each unit serving about a million people. Fifteen crores of rupees are expected to be spent in the next 3 years of which the Central Government and the U.S.T.C.A. will provide ten crores and the States will contribute the rest. With this sum of money, it is proposed to run 125 malaria control centres, where marshes will be drained and larvicidal measures will be adopted. Intensive spraying of human dwellings in malarial areas will be carried out. These operations may have to be repeated and in fact every item on malaria control would need an "operational" and a "maintenance" phase. The latter is in fact as important as the former, if not even more. The programme has started functioning from the first of April 1953 and so we may watch and see its actual working and achievements in the years to come.

INDUSTRIAL HEALTH: GOVERNMENT'S EFFORTS AT PROMOTION OF LABOUR WELFARE

ADDRESSING the Governing Body of the Indian Council of Medical Research on the 26th of March 1953, the Union Health Minister RAJ KUMARI AMRIT KAUR said that in the field of Industrial Health, the Industrial Health Advisory Committee had recommended that,

pending the establishment of a National Research Institute for the study of Industrial Medicine in the country, which might be difficult to establish in the near future in view of the paucity of trained personnel, the activities of the Industrial Health Research Unit at Calcutta should be expanded. The Government of India had accordingly been approached to sanction a special grant to enable the Council to implement the same. The Committee, she added, was contemplating the organization of a symposium under the auspices of the Council, at Bombay in order to discuss the problems relating to industrial psychology and cognate matters. These proceedings will be awaited with interest.

In the light of the above statements by our Union Health Minister, we would like to review the present position relating to labour welfare, industrial health and social insurance in India. The Sixth International Conference of Social Work recently held in Madras gave a top place to social insurance in the social security scheme. The Central Government instituted a statutory provident fund for employees as a measure of relief and help. The ordinance of 1951, provided for the institution of provident fund for employees of establishments in which 50 or more persons were regularly employed from day to day. Six major industries were covered by this ordinance *viz.*, Cement, Iron and Steel, Engineering (electrical and mechanical), Cigarettes, Paper and Textiles. This ordinance was repealed later by an Act passed in February 1952. The employer and employee had to contribute an equal sum and the rate of contribution was to be 6¼ per cent of the total emoluments. Nearly 75% of the country's industrial workers are covered by this Act, which however, does not apply to industries run or owned by Government, or local authorities as the workers therein are already enjoying the benefits of a provident fund. Factories of three years' standing are covered by this Scheme. The Central Government have now decided to transfer the administration of the Employee's Provident Fund Act of 1952 to the States Governments ; this was announced at a Tripartite Conference in New Delhi in February last.

The Act now applies to about 12 lakh workers in over 1400 factories and the annual contributions from the employers and workers amount to nearly 13 crores of rupees. The immediate task before the States' Governments is to find out the conditions in other industries to which the Act does not apply and to prepare the ground for extending it to all organised industries employing labour. The old argument against the institution of a provident fund in industrial concerns was that the administration of the fund would be unworkable in practice, in view of the large turnover amongst the workers. This argument would no longer hold water, as the Coal Mines Provident Fund Scheme of 1948 covering over 3 lakhs of miners has been working wonderfully well.

The Employee's State Insurance Act was placed on the Statute Book in 1948, and the Employee's State Insurance Corporation was

inaugurated on 6th October 1948, by our esteemed Chief Minister, Sri C. RAJAGOPALACHARIAR, who was then Governor-General of India. The E.S.I. Corporation consists of 38 members, including representatives of employers, employees, members of the medical profession and also M.U.P's. The State Insurance Act of 1948 was first inaugurated in February 1952 in the industrial centres at Delhi and Kanpur covering 95,000 and 56,000 employees respectively. The number of employers covered by this scheme throughout India would be in the neighbourhood of 12,000 while those in Delhi and Kanpur are 450 and 250 respectively. Factories which function only at certain seasons (*e.g.* sugar, groundnuts etc.) presumably do not come under this scheme.

The scheme is financed out of the Employee's State Insurance Fund which, as already stated, consists of contributions from employers and employees, grants and donations from the Central and States Governments. The Central Government is to bear two thirds of the administrative expenses during the first five years and the States Governments will contribute a third of the cost of medical care of the insured persons.

The following benefits in brief outline, are guaranteed under this scheme of State Insurance:—(1) *Medical aid*:—Every insured person is entitled to free medical treatment. A medical benefit council of 29 members will advise the corporation on the nature and extent of help to be given. 15 dispensaries and 2 mobile vans have been set up in Kanpur and 13 dispensaries and 2 vans in Delhi. Treatment is done by panel doctors. The extension of these benefits to the members of the employees' families is stated to be under active consideration. (2) *Sickness benefit*:—The insured person is entitled in case of actual sickness entailing medical treatment and attendance to receive cash roughly equal to one half of his daily wages for a maximum period of 56 days in any period of 365 days. (3) *Maternity benefit*:—An insured woman gets free medical aid, during confinement and half her daily wages or 12 annas whichever is greater for 12 weeks, (six weeks of which must precede her confinement). (4) *Disablement benefit*:—Free medical treatment and cash benefit equal to half his wages for the period for which he is certified unfit to work as a result of injury or disablement sustained during employment. (5) *Dependents' benefit*:—If the insured person dies as a result of employment injury, pensions will be paid to his widow and children, or in their absence to other dependents.

This scheme has now been extended to the Madras State and will be introduced in Coimbatore to start with. Sri Dr. U. KRISHNA RAU, the Madras State Minister for Industries and Labour, addressing the members of the Coimbatore Medical Association on the 12th February '53 said that the scheme was working well in Delhi and Kanpur. In Delhi there were five or six mills around which workers lived and a dispensary could be located near or inside the mill, with

a full-time medical officer and there was no provision for hospitalization. The panel system had been proposed for Bombay, as the mills were widely scattered and workers did not live close to the mills. Doctors will have to be appointed in each locality and paid on the basis of the number of patients treated by them. The Bombay State Government does not however, appear to have so far agreed to this panel system.

"The choice of Coimbatore to start this scheme in the Madras State was conditioned by the fact that the mills there, employed the largest number of women workers (12,000 out of a total of 35,000) The mills would have to spend on medical relief much more than what they were doing at present" said Sri Dr. U. KRISHNA RAU "and they would get in return one eighth of the total expenses". It has not been decided, so we gather, whether the Health or the Industries and Labour Minister should hold charge and be responsible for the working of the scheme. Whatever decision is reached, the All India and the States Medical Associations should be consulted on all important matters relating to the implementation of this beneficent and well-intentioned measure of the Union Government.

THE DRIVE AGAINST CANCER

(THE NEED FOR CONCERTED ACTION)

"THE inauguration at Bombay of the Cancer Research Centre was indeed a memorable event in the development of modern medicine in India" as Dr. KHANOLKAR the President of the International Cancer Research Commission observed. Powerful organisations backed by large grants were combating cancer in various countries of the world. The campaign against cancer is thus a world unity of action.

The Indian Cancer Society observed the Cancer week in March of this year for the purpose of rousing the public to a consciousness of the havoc wrought by this disease in the nation's health and to the imperative need on its part to give all it can to help in the anti-cancer campaign. As our Union Health Minister RAJ KUMARI AMRIT KAUR pointed out sometime ago, colossal sums have been collected and spent in fighting cancer in other countries. It may not be possible for the Indian Cancer Society to parallel the American Cancer Society's achievement in having collected nearly 35 crores of rupees in the twelve years of its existence, but we must try to emulate them and do our very best to collect funds for fighting cancer effectively. The Central Government has taken a keen interest in Cancer research and borne the main part of the capital expenditure in establishing the post-graduate research centre at Bombay and has also promised to meet the whole of the annual recurring expenditure of this very useful and valuable centre.

Early diagnosis is most essential in any campaign directed at the solution of the Cancer problem as it is the key of successful treatment. It is only in the early stages that cancers can be successfully tackled and cured. "Early diagnosis is no doubt often difficult" said Prof. J. C. AUB, the Cancer Specialist of Harvard who was in our midst about 2 months ago "and often delay must be allowed, to be sure of what is the cause of the trouble and how it should be dealt with; but this delay should be the problem of the doctor and not of the patient." Cancer is a difficult and a serious disease to tackle and baffles scientists now but it is highly likely that it will not baffle them for too long. In time and with earnest efforts and persistent research the riddle should be and will be solved.

In the Madras State we have few facilities for the diagnosis and treatment of cancer and the same is probably true of most other States in India. Cancer claims a large toll of victims amongst men and women (next only to tuberculosis) in the most fruitful period of their lives *i.e.*, between 30 and 50 years. The Bhore Committee of 1946 found that the incidence of cancer in India was just as high as in western countries. Though we have no statistics to show the true incidence of cancer in the country, the fact that the cancer wards in our hospitals are overcrowded with advanced cases of cancer is sufficient testimony to prove its very high incidence in the general population. Srimathi Dr. (Mrs.) S. MUTHULAKSHMI REDDI, who is a doughty champion of the cause of women and children in general and of their health in particular and has been agitating for quite a long time for the establishment in Madras of a Cancer Hospital and Research Institute, has again recently issued an appeal for the formation of a Branch of the Indian Cancer Society in Madras City. We very strongly and wholeheartedly commend her appeal to the members of the profession who should come forward in large numbers to assist in the aims and objects of the parent society which are manifestly directed towards the detection and ultimate eradication of cancer from our midst. She states:

> "The Indian Cancer Society has been formed on the lines of the American Cancer Society with its headquarters at Bombay, and a branch has also been organised at Calcutta. The aims of the Society are: (1) The education of the public and the medical profession in the methods of early recognition and prevention of cancer. (2) The formulation of the most effective means to combat the disease. (3) Organisation of clinical and laboratory research into its cause, distribution and therapy.
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> "We, in Madras, have been requested to assist in this global fight by organising a South Indian Branch of the Society. We invite all individuals, social welfare agencies and scientific associations to help us in this task".

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MEDICINE AND THERAPEUTICS

Treatment of ectopia of the testicle ; results observed in 132 patients.—(Abst. *Surg. Gynaecol. Obst.*, Dec. '52).

Of the total of 132 patients forming this material, 31, all of whom were over 20 years of age, had not received any treatment whatever, 59 were treated surgically (orchiopexy or castration) and 28 were treated with either androgens or chorionic gonadotropins. A few patients received the combined therapy of hormones and surgery.

Among the 31 nontreated patients, 17 were instances of bilateral and 14, unilateral cryptorchism. In 12 of the former and in 3 of the latter, signs of androgenic deficiency were observed. In all instances bilateral and unilateral, the testicle was atrophic (less than 2 cm. in diameter), and in all the patients with bilateral cryptorchism there was azoospermia.

Among the 59 surgically treated patients, the results with reference to fertility could later be checked in 37. In general it was found that the results were noticeably better when the operation could be done before the patient had reached the age of 10 years. The authors consider the best time for operation to be from the third to the sixth years of age.

Of the 28 patients treated with hormones, 3 were given testosterone, and satisfactory improvement was obtained so far as the symptoms of hypoandrogenism are concerned ; however, all these patients when checked later, were found to be azoospermic. Although no large dosages of this hormone were administered, the preparation was abandoned and the chorionic gonadotropins were substituted. Nevertheless, Zanartu and Hamblen believe that the androgens are deserving of a more extensive trial. Here again it was found that the results of chorionic gonadotropic therapy, were better when the therapy was administered before the patient had reached the age of 10. The authors regard the optimum period for this form of therapy to be from the third to the eighth year.

On the whole, hormone therapy, with the use of gonadotropins in sufficient amounts and requiring a pure preparation, produces results superior to those obtained by orchiopexy ; however the best results are had by a combination of the two methods. Subsequent hormonal therapy is capable of partial or total correction of the effects of surgical orchiopexy, *i.e.* if the testicular blood supply has not been injured by the operation.

The authors recommend that a sufficient trial be given to hormone treatment of the cryptorchic patient, and where it fails to produce results, the failure of descent should be ascribed to a mechanical obstruction of some sort and, if possible, the testicle should be brought down and fixed surgically, or removed by castration if it cannot be so lowered and fixed in the scrotum. Of course, hormone therapy should also follow the operation where indicated.

The dose of chorionic gonadotropin varies according to the age of the patient ; too large doses may result in precocious puberty. This can be avoided by watching the patient and suspending the treatment when necessary.—(J. W. Brennan, M.D.).

Treatment of liver abscess with chloroquine.—(*Ned. Tijd. Gen.*, 95 : 3316, 1951).

Roovers and van Steenis point out that liver abscess is nearly always a complication of intestinal amœbiasis. The therapeutic efficacy of a drug depends on its amœbicidal power and on its concentration where amœbæ are found *i.e.*, in the intestinal wall and liver in the form of *histolytica* and in the intestinal lumen in the form of *minuta*. They describe four patients in whom chloroquine was found highly effective, the effect being both rapid and lasting. No relapse had occurred up to two years after treatment. Two of the patients who responded to chloroquine had

become refractory to emetine. Like emetine treatment, the chloroquine treatment of hepatic abscess should be followed by a course of treatment with chinioform or carbarsone, in order to kill the *minuta* forms of the amœbæ in the intestinal lumen.—(Eng. Abst.: *J.A.M.A.*, 148: 12, 1952).

Possible precursors of essential hypertension and coronary artery disease.—(*Bull. Johns Hopkins Hosp.*, 89: 419-441, 1951).

An investigation designed to elucidate the importance of some traits most frequently associated with early cases of hypertension and coronary artery disease, was carried out on 400 medical students, by Dr. Thomas and his preliminary report after 4 years' study, contains the results of: detailed studies on heredity, studies of the cardiovascular system at rest and under stress, metabolic investigations and personality studies. In 93 there was a history of hypertension or coronary artery disease in atleast one parent. In this group with a "positive" parental history there appeared to be a significant proportion of subjects with high resting B.P., heart-rate, transitory tachycardia and hyperactivity to the cold pressor and to the exercise tests. Dr. Suchett Kaye the abstractor of the article for *Abst. W. M.* considers that the follow-up of these cases (now apparently healthy subjects) extending over many decades should be of some help.

The evaluation of eosinophil counts.—(*Lancet*, 1, 129–132, 1952).

Swanson, Bauer and Ropes studied the normal diurnal variation in eosinophil count in healthy and arthritic subjects and the effect on this count, of stress. They found that the effect of meals could be disregarded, and so fasting was unnecessary in such investigations. They recorded in all cases, a somewhat high early morning level falling to a slight midday rise and falling again in the after-noon to an evening rise. This spontaneous fall might be more than 50 per cent in the morning and as much as 40 per cent in the afternoon. It was evident that day-to-day counts were necessary at the same time and that an eosinopænia apparently induced by corticotropin or other agents like adrenaline could not be considered to be necessarily due to the agent unless the latter was administered in the afternoon and produced a fall of over 40 per cent in the count lasting more than two hours. It is important to make hourly counts for 4 hours after injection, because the maximum fall was sometimes found at the second or third hour.

Danger of blood transfusion.—It is one of the paradoxes of medicine that blood transfusion is both a cause and a cure of hæmolytic diseases of the new-born. If the same care that is given to the selection of blood for potential mothers, transfusion would practically never lead to hæmolytic disease.

Very soon after the discovery of the Rh blood groups, it was realized that Rh-negative women could be immunized by transfusion with Rh-positive blood, and that this could cause their Rh-positive babies to suffer from hæmolytic disease. In 1946, Diamond showed that 46 per cent of Rh-negative persons transfused with Rh-positive blood became immunized. Thus, if women of unknown Rh group are indiscriminately transfused with blood of unknown Rh group, nearly one half of the Rh-negatives among them will become immunized. Once immunized, a woman becomes and probably always remains unable to bear a healthy Rh-positive child. The serious responsibility borne by anyone who transfuses or injects blood into a female before or during childbearing age has thus been fully known for some five years.

Discombe and Hughes, showed in 1948 that, whereas only 2 per cent of unselected mothers had ever been transfused, 36 per cent of mothers of babies with hæmolytic disease gave a history of transfusion. It is easy to deduce that for this period, immediately after the war, and for a part of the London area in England, about 1 case in 3 of hæmolytic disease was the result of tranfusing an Rh-negative woman with Rh-positive blood. Most of the transfusions concerned were almost certainly given for air raid injuries, and they were given at a time when the possible long-term dan-

gers were known, if at all, only to a few research workers.

From the records of antenatal blood tests of the Midland Regional Blood Transfusion Service the outstanding fact demonstrated is that, among Rh-negative women transfused in the years 1940 to '47, 41·7 per cent were immunized, whereas of those transfused n 1948 and '49 only 20·6 per cent were immunized. Even if we subtract the 3·25 per cent who would have been immunized by pregnancy alone, the first figure is near to that found by Diamond for transfusions in which Rh compatibility was completely disregarded. The second figure shows a very great improvement, but even after correction for natural immunization it implies that 17 per cent of Rh-negative women receiving transfusions in the Midland Region in 1948 and '49 were immunized by those transfusions. Since only about half of all Rh-incompatible transfusions are known to cause immunization, it is probable that over one third of all transfusions of women in these years were still being carried out without taking account of Rh compatibility,

No woman should ever be immunized to the Rh factor by transfusion. Dr. Weiner, Regional Transfusion Director, controls the supply both of Rh-negative blood and of anti-Rh serum for the region. The suggestions made for avoiding immunization can therefore be accepted as having full regard to the present supplies of blood and serum, not only for this region but for the whole country. They indicate that most transfusions can be planned, and Rh-negative blood reserved for Rh-negative recipients. In emergencies, every female who has not passed the menopause should be treated as Rh-negative until she has been shown to be Rh-positive, but a specimen of blood must be taken before transfusion is started, and immediate steps taken to carry out Rh grouping of the patient, and direct matching of all bottles of blood, including the first.—(Editorial, *Internat. Med. Dig.*, 62:2, Feb. 1953).

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The modern treatment of early rheumatoid arthritis.—(*The Med. Press*, 4th March, 1953).

Dr. F. Dudley Hart, in charge of the Rheumatism Unit of the London Westminster Hospital, discusses the subject from various angles and makes the following general observatinso in summarising the position :—

(1) The basis of therapy in early rheumatoid arthritis is graded rest of the patient as a whole and of the affected joints in particular. The balance of general rest and exercise and of local immobility and exercises must be assessed for the patient as an individual, all considerations being taken into account. Uncontrolled rest may be worse than no rest at all.

(2) Analgesics will be required; their spacing and timing are important. The use of butazolidine must be under strict medical supervision and the patients should be warned beforehand of possible toxic effects.

(3) The interaction of disease and personality is a variable always to be taken into account. Maintenance of a high morale and keen optimism is of vital importance to the patient.

(4) Cortisone or corticotropin may be used in short-term therapy over a period of a few weeks to suppress acute exacerbations of the disease, to enable other forms of therapy to be carried out, or to help in rehabilitation. Long-term cortisone therapy is aimed only at partial suppression of symptoms until natural remission sets in ; its true place in therapy remains to be assessed. General rules regarding restriction of exertions are strictly adhered to ; cortisone does not replace general common-sense members. Cortisone causes temporary suppression ; there is *no evidence that it causes lasting remission of rheumatoid arthritis.*

(5) Hydrocortisone may be given by intra-articular or intra-bursal injection as a local anti-inflammatory agent in selected cases.

(6) Gold salts in individual doses not exceeding 40 to 50 mg. a week still hold their place in the treatment of early rheumatoid arthritis.

In the face of all the above therapy there is however, no evidence that the natural course of rheumatoid arthritis can be permanently altered. To date

there is no knowledge as to why natural remission occurs and how it can be brought about.

The use and abuse of antihistamines.—(*Med. Annals. Dt. Columbia*, 21 : 478, Sep., 1952).

Kailin, *et al* of the Georgetown University School of Medicine, Washington D.C., discuss the use and abuse of some new drugs in the field of allergy and gastro-enterology.

Allergy :—"There are some 18 or 20 chemically different antihistamines, and yet there is no one of them which can be called outstanding. Benadryl produces a higher proportion of sedative side effects than the other drugs and Neohetramine and Antistin are less potent than the rest. The antihistamines are effective local anæsthetics and also are chemical irritants". In nasal application they are sometimes helpful at least temporarily, and sometimes they aggravate symptoms either immediately following the application or a few hours later. "As to application on the skin, the local anæsthetic effect allays itching and the irritant effect is analogous to that of tars. In acute dermatitis the effect may be one of aggravating the lesion. In chronic dermatitis good results often ensue. There is one serious drawback to their use locally on skin lesions ; they are sensitizers and induce contact type dermatitis. "Many cases of gastro-intestinal allergy are helped by antihistamines, but the response to these drugs is not a valid therapeutic test for allergy". Antihistamines are appreciably less effective in bronchial asthma than in hay fever or urticaria. The atropine effect of the antihistaminics is undesirable because the mucous secretions are diminished. An additional undesirable pharmacological action is the constriction of the bronchial musculature. From a practical point of view, there is no objection to the use of these antihistaminics in mild, sporadic asthma attacks when the drug is effective. However, in more serious attacks or in those which are likely to be prolonged *antihistamines* are definitely *contra-indicated*.—(From *Internat. Med. Digest.*, Jan. 1953).

The life-span of the leucocytes in the human.—(*Science*, 115 : 1952).

Kline and Cliffton estimated the life-span of human leucocytes at the Yale University School of Medium by incorporating radioactive phosphorus (^{32}P) into their nucleoproteins during development. From 6 subjects with normal leucocytic counts, who had received 2·5 mc. of ^{32}P by mouth, blood was taken every second day for periods up to 3 weeks and the radioactivity of the phosphorus extracted from the separated leucocytes was determined. The results obtained led to the inference that leucocytes have an average life span of 12·8 days from the time of administration of the isotope, and that they circulate for 8·8 days after their release into the blood.

The treatment of obstructive azoospermia.—(*Minerva Urol.*, 3).

Trabucco of Torino advocates testicular biopsy to determine efficiency of testis, epididymis, and vas deferens, and describes 4 degrees of degeneration which can be determined thereby :—(1) a condition in which there is a moderate diminution of spermatozoa present, (2) with diminution of the spermatids, though spermatocytes are present, (3) where spermatogonia alone are to be seen, and (4) where there is a total absence of structure.

The potency of the vas can be ascertained by the only means of insufflation ; the vas is exposed for this purpose by a small incision ; the pressure obtained is ascertained by a special kymograph. The results obtained by the author are classified as :—(*a*) Normal—a sudden rise in pressure followed by a gentle and gradual descent ; (*b*) permanent obstruction—the pressure remains elevated, producing a series of plateaus ; or (*c*) reducible obstruction—composite of (*a*) and (*b*). In cases of obstruction with normal spermatogenesis, the author performs the operation of lateral intra-epididymal epididymo-vasal anastamosis, the operation being preceded by gonadotropin treatment (400 I.U., daily) for 45 days and followed by the administration of gonadotropin, ascorbic acid, and alpha-tocopherol. Out of 62 cases so treated, a successful result

was obtained in 41, but in the author's opinion, this high percentage of sucesses is not due to the operative technique so much as to the conscientious preliminary investigation and the thorough pre and post-operative treatment. In 29 of the 41 cases in which the obstruction was relieved, the operation was followed by fœcundation.—(Abst. by S. M. Vassallo in *Abst, W. Med.*. July '52).

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Infantile eczema.—(*New Orl. Med. Jour.*, Oct. 1952).

Dr. Stoesser discusses the various types of eczema of infancy as also the different forms of therapy in use.

Dermatitis : seborrhoeic eczema is not truly allergic ; it begins usually in the scalp and spreads to the face involving the cheeks and eyebrows. Lesions have yellow greasy scales. After cleaning the skin with some liquid germicidal detergent, resorcinal (1 per cent) ointment or vioform cream or ointment (3 per cent) should be applied. Diet is not important. Skimmed evaporated milk is good.

Atopic eczema—Allergic dermatitis:- It begins on the flushing areas of the cheeks and spreads to the forehead, ears, neck and extremities. First there is erythema and then itching papulovesicular eruptions. Family history is usually positive for allergy. The skin is cleaned with soap and water—not using any oil—. Wipe clean and dry and apply any one of the following : (1) Calamine lotion plain, (2) Burow's solution (Liqr. alum acetate) or (3) Carbonis detergens cream.

Woollen clothing to be avoided ; also feather beds and pillows ; dogs and cats should not come near the child. Sedation is important ; Elixir nembutal or amytal ½ teaspoonful every six hours as necessary. Antihistamines may sometimes help in sedation. Elixir benadryl may be used. To each drachm of this elixir ½ grain of phenobarbital may be added, as this is very effective in the very irritable children.

Diet must be regulated : Mothers who breast-feed infants should eschew eggs and cereals as far as possible and reduce milk in their diet. Calcium should be taken orally or parenterally in sufficient amounts. The infant is fed every 4 hours and 5 times in 24 hours usually at one breast in order to prevent a too rapid gain in weight In artificially fed infants the 4 hour schedule is followed, and evaporated milk may be used. Recently emphasis has been laid on soyabean preparations which are liked by infants and little children. Vitamins and iron should form supplements to the feeds.

Generalized seborrhoeic dermatitis (Icthyotic eczema).—This should not be confused with Leiner's disease. There is little involvement of the face, much of the extremities, and some portions only of the trunk. Redness, thickening of the skin, induration and scaliness are present. The skin should not be cleansed with mineral oils. Sulphonated vegetable oils with or without tar (5 per cent) works well when there is much itching. All ointments used for this condition should contain very little petrolatum and the following topical therapy is suggested by Dr. Stoesser: (1) Vioform cream 3 per cent or (2) a lotion made up of menthol 0·1, phenol 1·0, zinc oxide 10 gm. Lime water and olive oil in equal parts to make 120 c.c.

Diet regulation is important. Omit eggs and fish and use plenty of vitamins (A and D).

Pyogenic or infectious eczema :—This resembles impetigo : areas of eczema, mild to moderate, on face. arms, and legs become infected. "Pot. permanganas in dilutions of 1 to 5,000 to 1 to 10,000 is most efficient for cleaning. Following this procedure, aureomycin or terramycin ointment is applied for a few days till the infection clears up. The eczema heals spontaneously.

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Penicillin treatment of cardiovascular syphilis.—(*Amer. Jour. Med. Sci.*, 224 : Oct. 1952).

Encouraged by the relatively lessened reaction tendency of Penicillin G over the more crude product, the University of Pennsylvania group in May 1949, reported the results of the treatment of 50 cases of cardiovascular syphilis with penicillin therapy alone, without preparation of 12 patients with cardiovascular syphilis and congestive failure,

in whom penicillin and methods to combat congestive failure were used simultaneously. In this group not only were untoward effects lacking, but the distinct impression prevailed that these patients responded better than most patients with cardiovascular syphilis and decompensation who were treated, as was often the case in the pre-penicillin era, with measures aimed only toward combating congestive failure. Experience with these two groups of cases led to the belief that therapeutic shock in cardiovascular syphilis treated with penicillin is indeed uncommon.

Subsequently this group reported observations on 111 penicillin-treated cardiovascular syphilitic patients (simple aortitis, 48 cases; aortic regurgitation 51 cases; aortic regurgitation and aneurysm, 9 cases; and aneurysm, 3 cases) with re-emphasis of the virtual absence of significant therapeutic shock and paradox.

They found that 'penicillin is admirably tolerated by the decompensated heart, with clinical improvement in a high proportion of cases. Anginal pain was relieved without recognizable shock or paradox in 4 out of 5 cases. In syphilitic aortitis "uncomplicated", observed for from 3 to 58 months, one-third are improved, one-half unchanged and only one-sixth were worse (1 death of bronchopneumonia). In aortitis with regurgitation 64% are improved, 20% unchanged and 16% are worse. In aneurysm with regurgitation the number is too small for analysis, but 4 or 5 kept under observation improved. Of 3 large saccular aneurysms, 1 lapsed from observation, 1 died in a wiring operation, and 1 was unchanged.

In view of the uncertainties of diagnosis of uncomplicated syphilitic aortitis and the safe and probable effectiveness of penicillin therapy, the patient should be given the benefit of the doubt, not only because it is practically without danger but it is inexpensive and not time consuming. Treatment with bismuth and iodides prior to penicillin therapy of cardiovascular syphilis seems unnecessary from the reaction standpoint, at least.

Assuming that penicillin therapy is the safest agent yet produced for cardiovascular syphilis, Beerman suggests that the treatment scheme of the University of Pennsylvania group be employed until a more convenient or effective regimen is evolved. "The advocated treatment includes hospitalisation, two hour schedule, crystalline penicillin G (4,800,000 to 9,600,000 units in 40,000 to 80,000 unit individual doses), but procaine penicillin may be given to hospitalized patients on a 600,000 unit single or 300,000 unit two injection daily schedule for equal total dosage. The ambulatory use of this salt is under investigation. By present standards, repetition of course in excess of two of 9,000,000 units seems unnecessary..... The concomitant or subsequent use of heavy metal was not studied in this series, but seems on general experimental grounds to be unnecessary."—(*Intern. Med. Dig.*, Jan. 1953).

Antibiotic agents in respiratory infections.—Romansky and Kelser reviewing the available antibiotics and chemotherapeutic agents useful in the treatment of respiratory infections appropriately comment that it is even more necessary to make definitive diagnoses, to know as accurately as possible the organisms at fault, so that the most effective remedy may be chosen free from side-reactions and most economical to the patient. These agents are not an unmixed blessing. Resistance has emerged in certain bacteria not only to one antibiotic but simultaneously to several. So far, the pneumococci, and group A beta-hæmolytic streptococci, "the organisms most commonly found in diseases of the respiratory system, have shown no evidence of development of resistance to the available antibiotics". The hæmolytic staphylococcus aureus and staph. albus, have shown progressive development of resistance to the antibiotics.

Close watch for superimposed infections must be a routine duty in every case. The combination of two antibiotics (penicillin and streptomycin) "has been found effective in certain enterococci infections, not controlled by one agent." At present, penicillin is a satis-

factory remedy for mild cases of pharyngitis, naso-pharyngitis, tonsillitis, otitis media, peritonsillar abscess, oral abscess, and laryngitis and bronchitis due to gram-positive organisms, such as group A beta-hæmolytic streptococci, pneumococci and staphylococci. In severe cases, higher dosages at more frequent intervals are wiser than the use of enhancing agents such as benemid. Aureomycin, chloramphenicol and terramycin in suitable dosages seem equally effective. If the bacteriological diagnosis is uncertain these agents are to be preferred. The use of penicillin prophylactically in rheumatic fever lessens the incidence of recrudescences. In diphtheria, penicillin should be given with (*not as a substitute for*) diphtheria antitoxin. It has been noted that organisms disappear from the nasopharynx slightly earlier than when antitoxin alone is used. In the pneumonias the choice of the antibiotic will depend on the organism which may be the dominant invader. Sterile pleural effusions occur in 1 per cent of cases treated by antibiotics. In the surgical management of empyema, the lytic enzymes, streptokinase and streptodornase, have aided greatly by decreasing the thickness of the exudate. The early differentiation of a Friedlander's pneumonia is vital since it does not respond to penicillin and the prognosis is poor. Aureomycin, chloramphenicol and terramycin should be given orally in doses of 1 gm. every six hours. These same antibiotics are useful for influenzal pneumonia. The side-effects are many and various. The authors urge physicians to exercise caution in the use of chloramphenicol "until the situation is clarified." These are powerful weapons, valuable allies, but potentially dangerous enemies when abused.—(*J. Am. Med. Assoc.*, 13-12-'52 and Annotation *Med. Press*, 4-3-1953).

SURGERY

The use of preserved infant's aorta in treating a popliteal aneurysm.—(*British Journal of Surgery*, Jan. 1952; *Abst. W. M.*, July 1952 by C. J. Langland).

Martin and Lynn refer to the desirability of treating aneurysms by excising the sac and restoring a pulsatile flow of blood through the main vessel, and to the methods of vein grafting which have been used for this purpose. They suggest that a graft of preserved infant's aorta is valuable in these circumstances. They have described a case of syphilitic popliteal aneurysm in which such a graft was successfully used by them. The advantages of the infant's aorta are that it is tough, elastic and readily sutured. Owing to its relative thinness, it may possibly be well enough nourished as a graft to prevent the medical necrosis that occurs in thicker arterial grafts. Moreover, still born infant's aorta is not unduly difficult to obtain and its antigenic properties may be less important than those of adult vessels. The authors carried out lumbar sympathectomy, a month before the excision of the aneurysm, in the case reported. The aneurysmal sac was excised together with a segment of the popliteal vein adherent to it and the 10 c.m. gap was bridged with a 4-day-old infant's aorta. Heparin administration was started four hours after operation. The dorsalis pedis pulse, previously absent, returned and remained of good volume. Arteriograms before and ten days after the operation which have been reproduced, show the graft to be patent.

Radical excision of the chest wall for mammary cancer.—(*Cancer*, 4: 1263–1285: *Abst. World Medicine*, July 1952).

Dr. Urban reports on 17 cases of carcinoma of the breast treated at the Memorial Centre for Cancer, New York, by radical excision of the chest wall. This treatment is suitable for carcinoma of the medial half of the breast lesions fixed to and invading the thorax, local recurrence and radium (or X-ray) necrosis. The 2nd, 3rd and 4th ribs from 1 inch lateral to the costo-chondral junctions, the portion of the sternum to which they are attached, intercostal bundles, internal mammary glands,

pleura, and overlying carcinoma and skin are all excised *en bloc*. The extent of the excision varies with the size of the lesion and 4 or more ribs may be excised if involved. The incision in suitable cases extends horizontally along the first intercostal space, down the lateral border of the sternum, horizontally across the chest from the level of the 4th costo-sternal junction to the mid-axillary line and vertically to join the first incision. The underlying thoracic cage and parietal pleura are excised and may include as much as three quarters of the width of the sternum. The defect is closed with a graft of fascia lata or tantalum gauze sutured with fine silk to the surrounding muscles, fascia, and periosteum and covered by a pedicled flap of skin and subcutaneous tissue cut from the epigastrium, neck or opposite breast. If the breast is used its deep surface should be split vertically to gain length. The deep surface of pedicled skin flap is sutured to the margin of the defect in the thoracic cage, in order to obliterate dead space before approximating the skin edges. An intercostal tube drain is placed through the sixth intercostal space in the mid-axillary line, the lung inflated, and the end of the tube placed under water. The subcutaneous tissues are drained by a single Penrose drainage tube.

During the operation 500 to 1500 c.c. of blood is transfused. X-ray picture is taken immediately to make sure that no pneumothorax is left. If subsequent X-rays are satisfactory, the intercostal drain is removed after 24 hours. The wounds healed well and all the patients left hospital 10 to 14 days after operation. One patient died from metastases in the oppposite lung 3 years after medical excision of the chest wall. The other 16 are alive and well and ten of them have no clinical evidence of metastasis.

Methyl n-propyl ether for minor surgery.—(*Anaesthesia*, 7: 34–37, 1952).

Dundee and Lawson report on 600 cases of unpremedicated patients in the outpatient department of a large hospital, who were treated for minor surgical operation. In 200 of these cases, the anæsthetic was not supplemented by nitrous-oxide-oxygen; in 100 it was supplemented by trichlorethylene and in 300 with methyl n-propyl ether. As compared with nitrous-oxide alone, there was less postoperative nausea, vomiting and disorientation when ether was added; operating conditions were markedly improved and there were fewer toxic manifestations, like jactitation. Salivation was however, a troublesome complication.

On the few occasions, when it was used for inducing deep anæsthesia an irregular bradycardia occurred, which however, disappeared when the diethyl isomer was used instead. So the authors consider that methyl *n*-propyl ether should *not* be used for producing deep anæsthesia, but that it has a useful role to play as an adjuvant to nitrous oxide in minor surgery. This drug was found very helpful in assisting the transition from thiopentone to nitrous-oxide with diethyl ether, and there was less coughing than when trichlor-ethylene was used for this purpose.—(Abst. *W.* M., July 1952).

The criteria of a cancer cure.—(Gye, W. E., *Med. Jour. Aust.*, 1952).

Clinical trials of possible cancer cures in man are extremely difficult and are fraught with pit-falls for the unwary. Since all the symptoms of cancer in man (apart from the presence of tumour) are due to the secondary complications of sepsis, pressure obstruction and hæmorrhage, no improvement in the general condition of the patient, which does not include disapperance of the tumour can be admitted as evidence of specific action on cancer cells.

Many substances, for instance, lead, lead selenide bacterial products and organic compounds of great variety, for example,colchiceine, colchicine, nitrogen mustard etc. have been used in clinical trials on human patients. Most of them appeared to produce temporary amelioration but none has proved to be of really lasting effect in cancer.

Early and complete surgical incision still offers the best hope and in this

connection it should be pointed out that even if a medical means of killing cancer cells specifically should ever be discovered, there will still be immense scope for surgery. Relief of obstruction, mechanical restoration of function. "*cosmetic*", removal of a tumour mass and control of sepsis will all still be necessary, since cancer is not painful in the early stages and most often presents as an interference with function or as a visible tumour. The scope of a "*medical*" treatment would be an adjunct to the surgical therapy, to clear up any outlying cells or metastases.–(*J.A.M.A.*, 15-3-1952).

EYE, EAR, NOSE AND THROAT

Evaluation of available therapeutic agents in ophthalmology.—(*South Med. Jour.*, Oct. 1952).

When careful preliminary studies cannot be carried out to determine the specific infecting-organism, the choice of drug has to be made on the basis of clinical judgement.

Penicillin has been the most effective agent against most gram-positive organisms. Due to the widespread use of this drug, more and more resistant strains are appearing, particularly of the staphylococci, the most common pathogen in the eye. 35 to 40% of strains tested are found to be resistant to penicillin. Penicillin should be reserved for systemic administration and for injection into certain localized areas of infection *e.g.*, intra-ocular infections.

Bacitracin is not much used owing to its toxic effects on the kidney. It may be injected intra-ocularly in amounts not exceeding 100 units; but it may cause vitreous damage. For topical use, it is available as ophthalmic ointment, containing 500 units gm.

The sulphonamides have a broad spectrum, and many of them are inhibited in their action by pus, blood, local anæsthetics and substances containing large amounts of PAB. This can be overcome by irrigating the area before instillation, by ordering five or ten drops of the drug at frequent intervals so as to wash out the secretion. The three most valuable sulpha preparations for local use are sulphacetamide, gantrisin and sulphamylon. Sodium sulphacetamide 30 per cent solution offers the highest concentration and the best penetration. Sensitivity reactions are extremely rare. Gantrisin is to be preferred for children as the cetamide solution stings somewhat, when dropped into the eye.

Sulphadiazine remains the drug of choice for systemic administration as it penetrates all the ocular tissues readily and so appears to be of some value in prophylaxis against intro-ocular infections, before the infection has established itself.

Streptomycin is the drug of choice against many strains of B-pyocyaneus and M-tuberculosis infections. Streptomycin may be injected intra-ocularly or sub-conjunctivally, and 400 units would be the maximum for use in the human eye; even then light perception may be lost for some days. It is toxic to the retina and optic nerve; injection should therefore be in the centre of the vitreous away from these structures. A combination of penicillin 500 units and streptomycin 200 units in 0·1 cc. of normal saline should be injected into the affected area at the time of the initial repair of all perforating injuries of the globe. *Aureomycin* is effective against gram-positive and gram-negative bacteria and against rickettsiæ and spirochætes and in some viral diseases. Solutions are unstable and so of limited use. A stable ointment is available; aureomycin has proved to be valuable for topical application—particularly in refractory cases of blepharitis. Sensitivity reactions are very rare; it is *not* recommended for *intraocular* injection.

Terramycin is just as good and useful for the conditions for which aureomycin *(supra)* is used successfully. Solutions are stable only for 4 or 5 days. The ointment is stable. Mitsui *et al* have recently reported that it is the most efficient drug available for the treatment of trachoma. Resistance to terramycin and aureomycin, occurs in bacteria which infect the eyes. The importance of adequate dosage at the beginning of

the treatment is therefore, to be kept in mind.

Chloromycetin is effective against many gram-negative bacteria and rickettsiæ and moderately effective against gram-positive bacteria, spirochætes and viruses. It is soluble in water only to the extent of about 0 25 per cent: solutions are stable for about a week or 10 days. The 1% ointment is stable. Sensitization is rare. The drug penetrates the intact cornea and does not retard healing. It penetrates the intra-ocular tissues even when administered orally.

Neomycin is water soluble, and resistant to heat and microbial decomposition. It is active against gram-negative and gram-positive bacteria as well as acid fast organisms, stable in solution and ophthalmic ointment. It may be effective against organisms resistant to other drugs.

Cortisone and ACTH:—They control the inflammatory and exudative phases of ocular diseases but have no effect on the ætiological factor. The most valuable form has been topical cortisone. Subconjunctival injection is not so effective as topical application, but adds unnecessary trauma.

Hyaluronidase is useful in hastening and increasing the effects of procaine injections for anæsthesia and akinesia.

Hydrosulphosol is widely used in treating chemical and thermal burns of the cornea; but so far no adequate controlled studies appear to have been conducted to prove its value and rationale.—(*Current Med. Digest*, Feb. 1952).

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Sulphones in eye complications of leprosy.—*Leprosy in India*, 25:1, Jan. 1953.

Eye complications occurring in leprosy patients rapidly respond to sulphone therapy of all kinds. Dr. Gilbert of the Silver Jubilee Leprosy Hospital, Belgaum, states that the only advantage for D.D.S. which was tried by him was that it presented a method of rapidly getting a patient under maximum sulphone therapy. In the usual methods of giving sulphones, especially D.D.S. the dose has to be increased very slowly over a period of weeks or months. In the case of an eye involved with lepromatous iritis or subconjunctival leproma it is often necessary and always advisable to get the patient under treatment with effective doses of the sulphone without delay, which may mean loss of sight or impairment of vision. Dr. Gilbert gives in all such cases an injection of sulphone—Cilag on alternate days, in addition to the routine oral or paernteral sulphone therapy. A striking improvement was noted in some cases even after the first injection. 12 cases, ten with iritis and two with subconjunctival lepromata, were treated and only one case showed slow improvement and required ten injections before the iritis quietened down.

Other cases responded well to treatment with 2 to 5 injections. All cases in addition to receiving routine treat ment with D.D.S. either orally or parenterally were given local treatment of the eyes with atropine drops (4%) or atropine ointment (2%) thrice daily and hot baths to the eyes. Dr. Gilbert is of the opinion that the use of intravenous sulphone—Cilag (one ampoule on alternate days) is a help in getting eye involvements quickly under control.

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Allergic manifestations in otology.—(Arthur Dentenfass. M.D., M.Sc. F.A.C.S., *The Eye, Ear, Nose and Throat Monthly*, Vol. xxx No. 12, Dec. 1951).

The author says that surveys by Shamhague, King, Hamlin, Jordan and others, relating to the frequency of allergy as an etiological factor, or as complications of diseases of ear, nose and throat, showed 70 to 90 per cent. of all office patients to be allergic. It seems, Hausel and Jones stated that allergic reactions involving the mucous membrane of the Eustachian tube and tympanic cavity, have not received sufficient consideration.

In the *External ear* (1) contact dermatitis has been activated by cosmetics, bed clothes, drugs, bacteria and plant pollen. Even face powder and creams, lip sticks, finger-nail polish, hair dyes, and perfumes, are all sources of epidermal sensitivity. Certain varieties of otitis externa are known to disappear,

when pillows containing feathers, horse hair etc. have been removed from the bed. Sensitivity has been exhibited even to an earpiece of a hearing aid, or the telephone. Among the drugs, sulphonamides, mercurials and other heavy metals are local offenders, occasionally, bacterial allergy, due to staphylococci, streptococci and fungi, are also found; (ii) secondly certain ingredients, such as sulphonamide-like drugs, and some ingredients of diet *e.g.*, eggs, milk, chocolates, wheat etc., are responsible for generalised urticaria, purpura, and eczematous conditions in the head and flexor surfaces, especially in children.

In the *Middle Ear*, especially, in recently weaned infants, a history of sudden onset of intense pain, with partial deafness, after injection of some foreign protein, is almost diagnostic of primary middle ear allergy. It is corroborated by the prompt relief derived by elimination of the particular article of diet, such as milk or eggs etc. The ordeal of many a myringotomy can thereby be avoided. Clinically though the membrane may be red and swollen, it does not have the typical convexity of the infectious otitis media. Further, the serous discharge is eosinophilic, secondly allergic otitis media is also found, secondary to nasal allergy. In these cases, the eustachian orifice is found to be swollen, œdematous and occluded. Here also, one finds impaired hearing, pain, and a feeling of stuffiness in the head. This condition is frequently bilateral.

Even the *Inner Ear*, is not free from allergic manifestations. The Meniere's syndrome complex, with the classical triad of deafness, tinnitus and vertigo, is now believed to be mostly allergic especially, when they are of sudden onset. They may also be associated with disturbances of equilibrium, spontaneous nystagmus, and even nausea and vomiting. The attacks are paroxysmal; may be mild or severe; and repeated attacks give rise to loss of function and impaired hearing. The causative allergic element is proved beyond doubt, by its ready response to epinephrine. Urticaria, serum disease or asthma may coexist, in these cases. Many sensitive patients seem to have given a history of Meniere's syndrome, just after attending a barber's shop, theatre, dance hall, or any crowded place. Even ingestion of milk and milk products, wheat, and fresh fruits, have ushered in such an attack.

In all these conditions, a diagnosis is established by (1) a history of allergic manifestations, (2) physical examination for polypi or œdematous tissues, (3) routine skin tests, (4) blood counts for eosinophilic increase, and finally, (5) ready response to epinephrine. Of late, the recognition of allergy of upper respiratory tract, has assumed special importance in aviation medicine, because obstruction of the eustachian and antral atria, constitutes a major factor in causing aero-otitis media and aero-sinusitis.

In the treatment of these conditions, (1) specific hyposensitisation constitutes the first stage, (2) removal of the responsible environmental factors, the second, (3) omission of food causing sensitivity, the third, (4) local and general therapy by epinephrine or antihistamine drugs, along with a low sodium diet, and administration of ammonium chloride internally, being the fourth, (5) Finally, rhino-otologic therapy for polypi or œdematous tissues, should not be overlooked.

Infectious nondiphtheritic croup.—J. G. Gilbert and associates (*A M.A. Archives of Otolaryngology*, 55: 566, May 1952) report a study of 2,602 cases of nondiphtheritic infectious croup treated during the past twelve years at the Kingston Avenue Hospital, Brooklyn. The classification of these cases has been based on the pathological changes and not on the causative organisms found. On the basis of this classification, it has been found that acute catarrhal laryngotracheitis is the most common type of infectious croup, and that it can be successfully treated by humidification of the air and antibiotics. Subglottic exudative obstructive laryngotracheitis occurs most frequently in children under two years of age and is usually treated by laryngoscopy with aspiration of exudate and removal of crusts; this procedure may have to be repeated. In subglottic œdematous obstructive laryngotracheitis and also in supraglottic

œdematous obstructive laryngotracheitis, tracheotomy is indicated as a rule and should be done promptly. Acute obstructive laryngotracheobronchitis is fortunately of rare occurrence; while tracheotomy is indicated in cases of this type, it does not completely relieve the hypoxia and death results in many of these cases from bronchial and bronchiolar obstruction. In cases of subglottic œdematous obstructive laryngotracheitis, in which tracheotomy is employed, the O'Dwyer intubation tube was formerly used up to 1941. Since the use of this method of intubation has been abandoned in favour of tracheotomy, the mortality in cases of this type has been reduced from 37·9% to 14·2% With the use of antibiotics, the number of cases in which tracheotomy is necessary has been definitely reduced, but it is still a necessary procedure in fulminating obstructive infections. Tracheotomy should be done with a bronchoscope or other airway *in situ*, in order to reduce the incidence of such complications as pneumothorax and pneumomediastinum.—L. C. McHenry in *Medical Times*, Feb. 1953.

The laryngeal manifestations of tabes dorsalis.—Irving Fien and associates (*American Journal of Syphilis, Gonorrhea and Venereal Diseases*, 36:201, May 1952) report 11 cases of laryngeal paralysis or laryngeal crises in tabes and present a review of the literature. The authors' cases were found in a series of approximately 1500 cases of tabes or taboparesis. This is a lower incidence of laryngeal symptoms than is reported in the older literature, but in several of the series of cases reported, the involvement of the larynx was found on routine laryngologic examination revealing a posticus paralysis which caused no symptoms. The authors have not made a routine laryngologic study of a large series of patients with tabes. The chief laryngeal symptom in the authors' series of cases was laryngeal paralysis, which was bilateral abductor paralysis in 4 cases, complete laryngeal paralysis on the left side and partial paralysis on the right in one case; complete unilateral paralysis in 2 cases, and partial unilateral paralysis in 3 cases. Seven of these patients also had laryngeal crises. In one case laryngeal crisis occurred without paralysis. In the 4 cases of bilateral abductor paralysis, tracheotomy was necessary to relieve attacks of suffocation. Of the 11 patients in the authors' series, 10 were men and one was a woman; 10 were white and one was a Negro; the preponderance of white males in this group is "substantially greater" than in the entire series of tabetic patients. Seven of the 11 patients had definite and sometimes severe symptoms of tabes before the development of the laryngeal symptoms; in 2 the laryngeal symptoms were "pre-ataxic"; in 2 cases the diagnosis of tabes has not been definitely established; some other type of neurosyphilis may be present. In 9 of the 11 patients who could be followed up, the laryngeal symptoms disappeared in 3 patients but in 6 they persisted for periods of over 4 years. In the latter half of the nineteenth century, laryngeal involvement in tabes appears to have been relatively frequent as indicated by the number of cases reported; very few cases have been reported in recent years; and most physicians are not familiar with the syndrome which may result in a delay in diagnosis.—L. C. McHenry in *Medical Times*, Feb. 1953.

BOOKS RECEIVED

The following books have been received with thanks since 15-4-'53 and the courtesy of the Publishers in sending them is acknowledged. Reviews will appear in due course.—ED.

1. **"Care of the Teeth or Layman's Handbook of Dentistry"** by Dr. M. C. Bilpodiwala. M.B. B.S., J.P., Bombay 1949. Price Rs. 5/.

2. **"Physical and Emotional Aspects of Marriage"** by Dr. C. L. Anderson, The C.V. Mosby Company, St. Louis, 1953. Price $. 4.00.

BOOK REVIEWS

Pharmacology, Materia Medica and Therapeutics—By BIRENDRA NATH GHOSH, F.R.F.P.S. (Glas.), F.R.S. (Edin.), Honorary Fellow, State Medical Faculty of West Bengal, Professor of Pharmacology, R. G. Kar Medical College, Calcutta, Nineteenth Edition, 1952, pp 860. Published by Hilton & Co., Calcutta. Price Rs. 20/- or 30s. Net.

The 19th edition of this well-known book has come out of the press, only three years after its last edition, which shows the popularity of the book and the earnestness with which it is read. The book as revised includes the latest developments in the pharmacological field and so is more exhaustive than the previous edition. The materia medica proper and the administration of drugs are dealt with in separate chapters. The pharmacology and the therapeutic use of the drugs are considered individually and dealt with exhaustively. The newer drugs like antabuse for alcoholism, sympathomimetic drugs like noradrenaline, isoprenaline etc. and their related drugs like syntropan, trasentin, the newer drugs of the barbiturate group like kemithal and seconal sodium have all been noticed. The latest drugs used in anti-convulsant therapy like tridione and antihistaminics are also dealt with in great detail. The latest discoveries like ACTH and cortisone, folic-acid etc., and drugs like nitrogen mustard for the treatment of leukæmia have all been included and ably described. The newer anti-tuberculosis drugs, like streptomycin and PAS also find place in separate chapters.

It is not possible to mention in detail all the additions and improvements within a small compass. Some of the outstanding features only have been set forth in this review and these will suffice to show the extent to which the book has undergone revision and improvements in order to be of continued and increasing usefulness to the profession.

Principles of Refraction—By SYLVESTER JUDD BEACH, A.B., M.D., F.A.C.S., 1952, pp. 158. Messrs. C. V. Mosby & Co., St. Louis.

This is a practical book on refraction based on the author's long and wide experience. The methods described are those that have proved invaluable in the hands of the author and others who have followed him.

The book affords very interesting reading and the author has used several practical observations to explain the various optical phenomena encountered in the eye as an optical system, which will be found very useful in understanding the basic principles of refraction, and attempts to correct it by means of different types of lens systems.

There are eight chapters in the book and every chapter abounds in practical hints that will not fail to interest the reader. The last chapter on Ocular Neurosis is very illuminating and deserves careful study. We recommend it to all Refractionists and Ophthalmic Surgeons.

Studies in Visual Optics—By JOSEPH I PASCAL, B.S. M.A., O.D., M.D., 1952, pp. 800, illustrated. Messrs. C. V. Mosby Company, St. Louis.

The author, who has been a teacher of physiological optics and refraction, deals with the important aspects of physiological optics and allied problems of interest to the profession; and has incorporated many of the topics already published by him during the last 25 years. Being a well experienced teacher, he has dealt with difficult topics that are usually dry, in a simple and practical manner so as to bring out the fundamentals of the subject. The author has achieved his object which is (1) "to present some old material in a way which I have found is most easily grasped and absorbed by undergraduates and post-graduate students, and (2) to present in an orderly manner a number of new ideas, new methods, new applications, simplified formulas, memory aids for things easily forgotten, schematic and graphic presentation of things that are otherwise just nebulous ideas and a host of other

helpful hints which I have accumulated in the course of some forty years of teaching."

The book is divided into forty-six chapters. The chapters on "A Thimbleful of Trignometry; Ophthalmic calculations by the "DAM" Formula; Fundamentals of Dynamic Retinoscopy; Optical oddities of contact lenses, Diplopia fields from Benzine ring are most appealing and interesting. This book based on 40 years of experience provides the link between theoretical and clinical optics.

The Scalp in Health and Disease—By HOWARD T. BEHRMAN, A.B., M.D., Assistant Clinical Professor of Dermatology, New York University Postgraduate Medical School; Adjunct Dermatologist, Mount Sinai Hospital; Fellow in Dermatology, New York Academy of Medicine etc. with 312 illustrations, 1952. [Published by the C. V. Mosby Co., St. Louis].

This book is written by a dermatologist of outstanding ability with considerable experience and knowledge of the affections of the hair and scalp. He has also incorporated in the book valuable information collected from various sources which have all been handsomely acknowledged.

The arrangement of all relevant material into nine chapters makes for comfort and ease of study and reference. Thus the initial chapter extending over 120 of the 530 pages of the text, relates to the study of every known function and activity of the component structure of the normal hair apparatus. A large volume of useful material has been condensed without sacrificing clarity. The other eight chapters deal with all the known disorders and diseases of the scalp including anomalies, alopæcias and infections, scalp involvement due to (1) systemic disease and (2) other skin diseases, malformations, new growths and disorders of psychogenic origin. These and many other details are described in clear and useful fashion. In fact, as Dr. Marion B. Sulzberger, the Chairman of the Department of Dermatology and Syphilology, and of the Skin and Cancer Unit of the New York University Hospital has pithily put it "*the text is the most modern and encyclopaedic work on the microcosm of the human hair*".

Here then is the book, which the general practitioner also might consult; an authoritative one containing the most modern and most informative contribution to the study of the scalp. The relation of endocrines to the growth of hair, to scalp nutrition, and the daily hygienic routine for the maintenance of the scalp and hair in a healthy condition are also dealt with, in minute detail. The various medicinal toilet preparations for the hair and scalp *viz.*, shampoos dyes, bleaches, hair lotions, wave setters and their effects on the hair and scalp have been elaborately reviewed. The value of the book is greatly enhanced by the three hundred and odd beautiful illustrations, some of which *e.g.*, those relating to parasitic infections in Chapter V (pp. 287 to 349) are simply superb. This book will certainly prove of great value not only to the dermatologist but also to the general practitioner, and the family doctor who is frequently consulted by his *clientele* for various conditions connected with the hair and scalp particularly by ladies and children: In addition to the several recipes given in the text proper, the appendix contains a formulary of about 250 medicinal and toilet preparations such as shampoos, hair lotions, hair oils, brilliantine, antiseptic and bactericidal lotions, fungicides, ointments etc. all of which are exclusively for use in connection with the hair and scalp.

NEWS AND NOTES

Antibiotic Treatment of Treponemal Diseases

Although aureomycin, chloromycetin and terramycin have been demonstrated to have treponemicidal effect, knowledge accumulated at present does not indicate that they will play an immediate role in the control of treponemal diseases. Nor was it considered likely that at the present time the use of peroral antibio-

tics, including penicillin, would cause a major realignment of health technique used in treponematosis control. Penicillin has been demonstrated to be the most outstanding of the effective antibiotics in syphilis, bejel, yaws and pinta, and in reviewing available data on its usefulness the committee found no evidence that true penicillin resistance has been observed in treponemes so far. Constant vigilance should, however be exercised to detect any such resistance developing in the future, and WHO should investigate any suspected evidence through the International Treponematosis Laboratory Centre and other laboratory as well as clinical institutions.

Since the third session of the committee three years ago a significant further change in the attitude of the medical profession throughout the world had become apparent, the conclusion being reached that therapy with penicillin in early infectious syphilis (and other treponemal diseases) is preferable to treatment with arsenicals and bismuth, when efficacy, toxicity, ease of administration and cost are considered. There was also a growing recognition that there is no advantage in supplementing the results obtainable with penicillin by concomitant or subsequent injections of "adjuvant" metal chemotherapy. The committee is basing this outlook on the views expressed in consultation between WHO and a number of recognized experts, members of the WHO Advisory Panel, from many countries, and the opinion expressed in presentations before the Tenth International Dermatological Congress as well as on the unanimous considerations of the members of the Expert committee itself in this regard.

The fate of penicillin in the host and its therapeutic effectiveness depend on many factors including the distribution of penicillin in body fluids and organ tissues in relation to dosage, vehicle and blood concentration. The latter does not necessarily picture directly the therapeutic effectiveness, tissue retention or absorption etc. Available knowledge indicates generally, however, that prolonged exposure of treponemes to the action of penicillin at a therapeutic level as reflected in the (tissue and) blood concentrations over a period of time is necessary. Such exposure can be obtained with repository preparations.

Minimal Therapy for the Individual Clinic Patient with Venereal Syphilis

(1) *Early syphilis*:—In individual clinic patients with primary syphilis, treatment should be a minimum 2·4 mega units of repository penicillin, and patients with secondary syphilis should be treated with a *minimum of 4·8 mega units*. The committee considered that in all cases, a large initial dose—not less than half the total minimal doses noted above—should be given to assure reasonably effective therapy, since in many areas the patient may not return for further injections. With such a large initial "insurance" dose a high proportion of cures will result. In view of the fact that the duration of an effective (blood) tissue penicillin concentration is the most important single consideration in the treatment of treponemal infections, there is an advantage in the individual clinic patient of dividing the total dosage into several injections; this might permit utilization of various public health techniques which are considered essential to good venereal-disease control (epidemiological investigations, education of the patient, clinical and serological follow-up).

(2) *Latent and late syphilis*:—Because of its demonstrated superiority over previously available forms of therapy, penicillin is the treatment of choice also in other forms of syphilis. Detailed optimum schedules of therapy could not be recommended at this time, but in no case should less then 4·8 mega units be given to patients with late or latent syphilis. Although sufficient time has not elapsed to judge the insurance value of penicillin therapy in late latent syphilis *vis-a-vis* the known effectiveness of arsenicals and bismuth, the committee found no reason to believe that it will prove to be inferior, in view of the known efficacy of the antibiotic in neurosyphilis and so-called late benign syphilis.

(3) *Syphilis in pregnancy*:—At least one serologic test for syphilis should be

carried out during each pregnancy; whenever possible a second test should be made in the last trimester. Treatment with penicillin alone should be given as soon as a diagnosis of syphilis in pregnancy is established; the amount should not be less than 4·8 mega units of PAM. When facilities for clinical and quantitative serological examination plus assurance of adequate follow-up are not available, penicillin treatment might be repeated during each subsequent pregnancy.

(4) *Infantile congenital syphilis* :—In the light of increased experience with the use of penicillin in early congenital syphilis and considering the generally increased availability of the antibiotic, minimal therapy in this condition should be 200,000 units of penicillin per kilogram of body weight. Experience obtained with PAM in children over the last few years indicates that this preparation is a useful alternative for aqueous penicillin.

(5) *Late congenital syphilis* :—The treatment of late congenital syphilis should be as intensive as that used in late acquired syphilis, with adjuvant therapy given whenever indicated (*e.g.* cortisone locally for interstitial keratitis). —(*Extract from 4th Report of WHO Expert Committee on V.D.*, 13-2-'53).

T.B. Treatment in U.K.

The Director of the Tuberculosis Demonstration and Training Centre, Patna, Dr. Bijoy Kumar Banerjee, is among a group of nine tuberculosis specialists now making a fortnight's study of British practice in the prevention and treatment of tuberculosis, as well as aftercare and resettlement. They have been attending lectures by leading British specialists on "tuberculosis in industry, tuberculous meningitis, non-tuberculous chest conditions, and tuberculin testing in school children etc", and visiting hospitals, clinics, research institutions, convalescent and resettlement centres, including the Papworth Village Settlement near Cambridge.

The course has been planned under the guidance of Dr. W. H. Wynn, consulting physician to the Queen Elizabeth Hospital, Birmingham, and Emeritus Professor of Medicine at Birmingham, University, and Dr. C. H. C. Toussaint, consultant chest physician to the Willesden Chest Clinic and to the Central Middlesex Hospital.—*British Information Services*, (23-4-'53).

Advanced Studies under Colombo plan

One more Indian has just started studies in Britain under the Technical Co-operation Scheme of the Colombo Plan. He is Dr. H. I. Jhala, Professor of Pathology at the Grant Medical College, Bombay. Dr. Jhala, in Britain for a year will for the first six months be at the Post-graduate Medical School in Hammersmith, London, working as a visiting colleague with Professor J. H. Dible. During the second half of his stay, two months will be spent at Cambridge, one at Edinburgh, and three months, visiting pathological laboratories in various parts of the country.—(*B.I.S. Bulletin*, 25-4-'53).

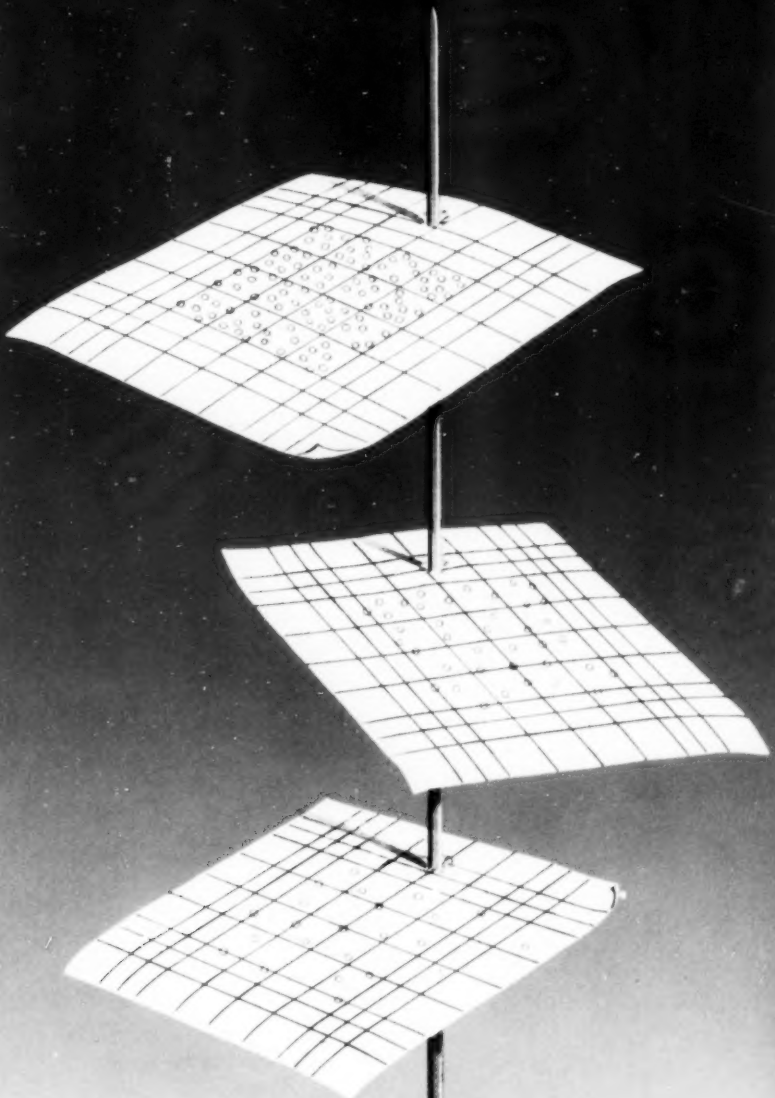
ADDENDA AND CORRIGENDA

With reference to the article entitled 'Pharyngeal Diverticulum' which appeared on page 238 in the April '53 issue of the 'ANTISEPTIC', the name of its author *is* "Dr. N. R. Amesur" *and not* "Dr. C. A. Amesur". The error is regretted.

In the article "Jaundice" by Sri K. V. Janardhan Rao, M.B B.S., published in the April '53 issue of the 'ANTISEPTIC', the following corrections are to be noted :—

(1) On page 246, line 10, *add* "but intensifies late" *after* "(colour appears)"; (2) line 28, *add* "liver and" *after* "yellow atrophy of"; (3) On page 247, line 23, *read* "methionine" *for* "methidine"; (4) line 24, *read* "Methionine" *for* "Methidine"; (5) line 25, *read* "the liver" *for* "the lung".

EXHEPA 12



B_{12}

FOLIC ACID

LIVER EXTRACT

DUMEX

EXHEPA 12

It has now been shown that the so-called Macrocytic Anaemias differ in their response to the haemopoietic agents B_{12}, Folic Acid, and Liver Extract.

Each clinical entity comprising this group of anaemias has been called " a mixed bag " in so far as response to therapy is concerned.

For example a case of Tropical Nutritional Anaemia may respond to B_{12} in spite of previous failure with folic acid and yet, another case of the same category may fail to respond to B_{12} while folic acid may succeed.

EXHEPA 12 containing per c. c.

B_{12}	24 mcgs.
Folic Acid ...	6 mgs.
Liver Extract— (Equivalent to Fresh Liver) ...	12 gms.

provides a single therapeutic agent effective in all cases of Macrocytic Anaemia, e.g. :

Tropical Nutritional Anaemia
Anaemias of Sprue and Allied Disorders
Anaemias Associated with Pregnancy
Megaloblastic Anaemias of Infancy
Pernicious Anaemia.

EXHEPA 12 is available in vials of 10 c. c. at economical rates.

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